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PATENT OFFICE NOTICES

Suspension from Practice

Donal E. McCarthy (Registration No. 18,067) has been suspended from further practice before the Patent Office, without prejudice to reinstatement after August 22, 1974, or sooner if circumstances warrant.

C. MARSHALL DANN,
Apr. 11, 1974. *Commissioner of Patents.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,707,775, Hoffman and Holke, ELECTRICAL CONNECTORS; **3,322,888,** C. G. Zemels, COMPRESSION CONNECTOR; **Reg. No. 596,526** (SQUEEZON), Kearney-National, Inc.; **Reg. No. 737,050,** same, **filed** Oct. 20, 1972, D.C., N.D. Ala. (Birmingham), Doc. 72-938, *Kearney-National, Inc.* v. *Electrical Specialty Products Co., Inc.* Consent judgment, patents and trademarks valid and owned by plaintiff, defendant has infringed. Defendant permanently enjoined from further infringement of patent, and permanently enjoined from perpetrating any further acts of unfair competition, defendant's counterclaims A, B, and C are dismissed with prejudice, Sept. 13, 1973.

2,868,249, Taylor and Puckett, WOODWORKING APPARATUS, **filed** Sept. 26, 1973, D.C., N.D. Tex. (Dallas), Doc. CA-3-7717-E, *Industrial Woodworking Machine Co., Inc.* v. *Charles F. Gordon, Vernon E. Wyatt and Steve A. Wyatt, doing business as Wynot Machinery Co.*

2,933,333, Bredtschneider, Drewes, Laird and Omak, PIPE COUPLING, **filed** Nov. 1, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2755, *Crane Co.* v. *Aeroquip Corp.* Final judgment order, plaintiff owner of patent, patent is valid and enforceable against defendant as to Claims 1–4, 6, 9, 11, 14 and 15. Defendant restrained and enjoined, plaintiff's request for judgment that license agreement dated June 1, 1968 had been terminated denied. Defendant's counterclaim dismissed, Oct. 5, 1973.

3,027,477, E. E. Sheldon, ENDOSCOPES; **3,205,390,** same, ENDOSCOPIC INSTRUMENTS; **3,265,892,** same, SCANNOGRAPH USING FLEXIBLE FIBER LIGHT CONDUCTORS; **3,286,087,** same, DEVICE FOR ILLUMINATION; **3,305,690,** same, ELECTRON DISCHARGE DEVICE WITH FIBER OPTIC END WALL; **3,324,326,** same, ELECTRON DEVICES WITH FIBEROPTIC MEMBERS; **3,345,531,** same, DEVICES FOR LIGHT TRANSFER BY FIBER OPTIC MEMBERS; **3,375,388,** same, VACUUM TUBES PROVIDED WITH LIGHT CONDUCTING MEMBERS AND WITH A SCREEN OF A HIGH PHOTOELECTRIC SENSITIVITY; **3,423,620,** same, VACUUM TUBE DEVICE HAVING LIGHT CONDUCTING RODS AND LUMINESCENT SCREEN; **3,499,107,** same, LIGHT TRANSFER DEVICES USING LIGHT CONDUCTING MEMBERS OF MULTILAYERED CONSTRUCTION AND PHOTOELECTRIC MEANS; **3,636,366,** same, OPTOELECTRIC SCREENS PROVIDED WITH LIGHT-CONDUCTING MEMBERS, **filed** Sept. 4, 1973, Ct. of Claims (District of Columbia), Doc. 330-73, *Eward Emanuel Sheldon* v. *The United States.*

3,040,968, Long and Crane, WRAPPER FOR PACKAGED PRODUCE, **filed** Sept. 28, 1973, D.C., N.D. Ill (Chicago), Doc. 73c2484, *Standun, Inc.* v. *Polycraft Corp.*

3,205,390. (See 3,027,477.)

3,208,409, J. A. Gale, DESK DEVICE; **3,259,431,** same, SEATING DEVICE; **3,370,885,** same, CONTOUR LOUNGE CHAIR; **3,441,310,** same, SEATING STRUCTURE; **3,556,522,** same, SLIDE; **D. 198,312,** same, ROCKING CHAIR; **D. 198,324,** same, TABLE; **D. 200,240,** same, DESK; **D. 201,879,** same SWIVEL CHAIR; **D. 207,105,** same, CHILD'S SLIDE; **D. 213,271,** same, SLIDE; **D. 221,784,** Gale and Heinz, ROLLING TOY; **Reg. No. 851,849** (STEP'N SLIDE), The John Gale Company, **filed** June 19, 1973, D.C. Minn. (Minneapolis), Doc. 4-73-C-323, *Richard H. Barry, as trustee for Moulded Products, Inc.* v. *John A. Gale and John Gale Company.*

3,246,336, Baribo, Porter, Turner and Wright, MOLASSES FEED BLOCKS AND METHOD OF PREPARATION AND USE, **filed** June 20, 1972, D.C., N.D. Ind. (South Bend), Doc. 72S123, *A. E. Staley Manufacturing Company* v. *VyLactos Laboratories, Inc.* Cause transferred to U.S. District Court for S. D. of Des Moines, Iowa, pursuant to Section 1404(a), Title 28, U.S.C., order to transfer entered Sept. 27, 1973.

3,259,431. (See 3,208,409.)

3,265,892. (See 3,027,477.)

3,286,087. (See 3,027,477.)

3,305,690. (See 3,027,477.)

3,306,221, K. W. Goodpasture, MAGNET DRIVE PLASTIC PUMP, **filed** Oct. 12, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2623, *Kenneth Wayne Goodpasture* v. *Service Filtration Corp. and Jack H. Berg.*

3,322,888. (See 2,707,775.)

3,324,326. (See 3,027,477.)

3,345,531. (See 3,027,477.)

3,360,157, Bolt and Wobbe, METHOD OF FORMING A COATED METAL CONTAINER AND ARTICLE PRODUCED THEREBY, **filed** Sept. 20, 1973, D.C., E.D. Wis. (Milwaukee), Doc. 73-C-516, *American Can Company* v. *Crown Cork & Seal Company, Inc.*

3,370,885. (See 3,208,409.)

3,375,388. (See 3,027,477.)

3,423,620. (See 3,027,477.)

3,441,310. (See 3,208,409.)

3,499,107. (See 3,027,477.)

3,556,327, H. K. Garrison, LOOSE HAY WAGON; **3,728,849,** E. C. Lundahl, HAY LOADER, **filed** Sept. 28, 1973, D.C., C.D. Utah (Salt Lake City), Doc. C-299-73, *Deere & Company* v. *Hesston Corporation.*

3,556,522. (See 3,208,409.)

3,623,289, J. L. Lowery, FLEXIBLE SPACING DEVICE FOR CONCRETE REINFORCING MATERIALS; **3,632,209,** E. F. Kingman, SYSTEM FOR MEASURING LIGHT TRANSMITTANCE THROUGH ABSORBTIVE OR DIFFUSIVE MEDIA, **filed** Apr. 3, 1973, D.C.N.J. (Newark), Doc. C-452-73, *Celesco Industries, Inc.* v. *Robert H. Wager Co., Inc. et al.* Stipulation and order of dismissal of complaint, Oct. 10, 1973.

3,627,608, Steiner and Paulsen, METHOD OF FORMING A PANEL HAVING A COMPOUND CURVATURE, **filed** Sept. 24, 1973, D.C., E.D. Mich. (Detroit), Doc. 74-70379, *Woodall Industries, Inc.* v. *W-K Manufacturing Company.*

3,632,209. (See 3,623,289.)

3,636,366. (See 3,027,477.)

3,728,849. (See 3,556,327.)

3,758,151, F. M. Re, RECLINING CHAIR, **filed** Oct. 17, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2667, *Dual Manufacturing & Engineering et al.* v. *Burris Industries, Inc.*

Re. 25,506, C. H. Stevens, Jr., CABLE CONNECTOR ASSEMBLY, **filed** Dec. 26, 1968, D.C., S.D. Ohio (Cincinnati), Doc. 6958, *Empire Products, Inc.* v. *Helox Industries, Inc. et al.* Consent judgment and decree, plaintiff owner of patent, all claims and counterclaims are dismissed wtih prejudice, Aug. 28, 1973.

Re. 25,899, A. J. Waibel, HIGH PRESSURE VALVE ASSEMBLY, **filed** Sept. 27, 1971, D.C., W.D.N.Y. (Buffalo), Doc. C-1971-426, *Ingersoll-Rand Company* v. *Dresser Industries, Incorporated.* Order of dismissal entered Mar. 23, 1973.

D. 198,312. (See 3,208,409.)

D. 198,324. (See 3,208,409.)

D. 200,240. (See 3,208,409.)

D. 201,879. (See 3,208,409.)

D. 207,105. (See 3,208,409.)

D. 213,271. (See 3,208,409.)

D. 221,784. (See 3,208,409.)

D. 224,248, W. E. Bennett, PASSENGER CARRYING TOW KITE, filed June 12, 1973, D.C., W.D. Wash. (Seattle), Doc. 389–73C2, *William Edward Bennett* v. *Jobe Corporation and Jeffrey A. Jobe.*

Reg. No. 596,526. (See 2,707,775.)

Reg. No. 737,050. (See 3,707,775.)

Reg. No. 851,849. (See 3,208,409.)

Certificates of Correction for the Week of May 7, 1974

Re. 27,895	3,748,656	3,770,324	3,780,075
D. 227,542	3,749,974	3,770,612	3,780,123
D. 228,516	3,752,037	3,770,614	3,780,404
D. 228,614	3,752,620	3,770,990	3,780,743
D. 229,889	3,753,916	3,771,155	3,781,177
3,582,255	3,754,051	3,771,825	3,782,072
3,655,512	3,754,905	3,772,667	3,782,376
3,657,213	3,755,541	3,772,684	3,782,411
3,657,219	3,755,591	3,772,929	3,782,845
3,657,306	3,756,941	3,773,006	3,783,207
3,657,438	3,757,412	3,773,422	3,783,415
3,665,994	3,757,446	3,773,484	3,783,950
3,681,059	3,758,269	3,773,530	3,784,251
3,681,108	3,759,011	3,773,817	3,784,809
3,692,719	3,759,193	3,774,313	3,784,857
3,692,794	3,760,012	3,774,584	3,785,303
3,694,348	3,760,171	3,775,607	3,785,413
3,705,119	3,760,858	3,775,960	3,785,555
3,712,140	3,762,626	3,776,122	3,785,590
3,712,808	3,763,141	3,776,468	3,785,659
3,713,799	3,763,225	3,776,476	3,785,676
3,715,354	3,763,311	3,776,735	3,785,735
3,717,141	3,764,036	3,776,848	3,785,902
3,719,612	3,765,147	3,776,879	3,786,358
3,719,726	3,765,405	3,777,040	3,786,887
3,719,817	3,765,731	3,777,138	3,786,916
3,720,656	3,765,810	3,777,703	3,786,974
3,721,386	3,765,813	3,777,805	3,788,861
3,736,303	3,765,992	3,777,845	3,789,198
3,736,977	3,767,309	3,778,238	3,789,346
3,738,360	3,767,589	3,778,244	3,789,402
3,738,935	3,767,824	3,778,371	3,790,067
3,739,204	3,768,014	3,778,633	3,790,142
3,743,323	3,768,568	3,778,989	3,790,182
3,743,660	3,768,604	3,779,424	3,790,526
3,743,930	3,770,072	3,779,676	
3,748,440	3,770,074	3,779,879	

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the listing policy of each agency-sponsor.

Copies of patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22151, at the prices cited. Requests for copies of patent applications must include the patent application number and the title.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each.

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DOUGLAS J. CAMPION,

Patent Program Coordinator, National Technical Information Service.

DEPARTMENT OF THE AIR FORCE
AF/JACP, Washington, D.C. 20314

Patent application 300,002. Chemical Laser Nozzle System. Filed Oct. 24, 1972. PC $3/MF $1.45.

Patent application 301,029. Liquid Expulsion Subsystem. Filed Oct. 26, 1972. PC $3/MF $1.45.

Patent application 304,585. Modified Polybenzothiazole-Based Adhesive. Filed Nov. 7, 1972. PC $3/MF $1.45.

Patent application 306,504. Variable Angle Jet Flap System. Filed Nov. 14, 1972. PC $3/MF $1.45.

Patent application 306,648. Treatment of Graphite Fibers. Filed Sept. 29, 1972. PC $3/MF $1.45.

Patent application 319,591. Inner Surface Single Beam Reflected Light Hologram. Filed Dec. 29, 1972. PC $4/MF $1.45.

Patent application 328,158. Rotor Blade Capturing Assembly. Filed Jan. 30, 1973. PC $4/MF $1.45.

Patent application 329,509. Vinyl-Substituted Siloxane and Siloxazane Polymers. Filed Feb. 5, 1973. PC $4.25/MF $1.45.

Patent application 341,634. Process for Fabricating Porous Berryllium Billets. Filed Mar. 15, 1973. PC $4/MF $1.45.

Patent 3,702,326. Fused Ring Tetraamino Compound, the Tetratosylate Thereof, and Their Synthesis. Filed Aug. 5, 1970. Patented Nov. 7, 1972. Not available NTIS.

Patent 3,714,695. Method for Forming Thrust Chambers. Filed Sept. 17, 1970. Patented Feb. 6, 1973. Not available NTIS.

Patent 3,715,509. Method and Means for Providing Resolution Level Selection in a Spectrum Analyzer. Filed Feb. 18, 1971. Patented Feb. 6, 1973. Not available NTIS.

Patent 3,716,809. Acoustic Surface Wave Resonator. Filed Aug. 11, 1971. Patented Feb. 13, 1973. Not available NTIS.

Patent 3,719,206. Refillable Cooling Package. Filed Feb. 12, 1971. Patented Mar. 6, 1973. Not available NTIS.

Patent 3,719,831. Logarithmic IF Amplifier. Filed Feb. 18, 1969. Patented Mar. 6, 1973. Not available NTIS.

Patent 3,719,889. Laser Pulse Train Totalizer and Interval Counter. Filed Dec. 14, 1971. Patented Mar. 6, 1973. Not available NTIS.

Patent 3,719,899. Stabilized, Optimizable, Gaseous Electrical Discharge. Filed Nov. 4, 1971. Patented Mar. 6, 1973. Not available NTIS.

Patent 3,721,625. Solid Lubricant Compositions Employing Polybenzimidazole Resins and Lubricating Pigments. Filed June 11, 1968. Patented Mar. 20, 1973. Not available NTIS.

Patent 3,724,495. Apparatus for Clean Sealing Valves. Filed Feb. 11, 1971. Patented Apr. 3, 1973. Not available NTIS.

Patent 3,736,542. High Voltage Transformer. Filed June 15, 1971. Patented May 29, 1973. Not available NTIS.

Patent 3,736,587. Coherent Frequency Hopped. Phase Modulated Acoustic Surface Wave Generator. Filed May 26, 1971. Patented May 29, 1973. Not available NTIS.

Patent 3,738,168. Laser Beam Scanning Device. Filed Nov. 16, 1971. Patented June 12, 1973. Not available NTIS.

Patent 3,738,750. Doppler Shift Laser Velocimeter Data Processor. Filed Dec. 10, 1970. Patented June 12, 1973. Not available NTIS.

Patent 3,739,391. Metallized Channel Guide Antenna. Filed June 12, 1972. Patented June 12, 1973. Not available NTIS.

Patent 3,739,634. Apparatus for Generating Ultra High Total Enthalpy Gases With Multicomponent Flow. Filed July 6, 1972. Patented June 19, 1973. Not available NTIS.

Patent 3,740,374. Poly (Quinoxalino-bisimidazonaphthaldimide) Polymers and Method of Preparation. Filed Sept. 26, 1972. Patented June 19, 1973. Not available NTIS.

Patent 3,740,538. Digital Sorter and Ranker. Filed July 28, 1971. Patented June 19, 1973. Not available NTIS.

Patent 3,740,654. Signal Conditioning Circuit. Filed Mar. 7, 1972. Patented June 19, 1973. Not available NTIS.

Patent 3,740,920. Method for Packaging Hybrid Circuits. Filed May 26, 1971. Patented June 26, 1973. Not available NTIS.

Patent 3,741,648. Acoustic Beam Splitter for Infrared Lasers. Filed July 16, 1971. Patented June 26, 1973. Not available NTIS.

Patent 3,742,390. Multi-Frequency Microstrip Filter-Detector. Filed Nov. 23, 1971. Patented June 26, 1973. Not available NTIS.

Patent 3,742,399. Vertical Tapeline Microwave Coupler for Paramagnetic Spin Resonance. Filed May 19, 1971. Patented June 26, 1973. Not available NTIS.

Patent 3,742,501. Radar Apparatus With Directional Discrimination and Increased Radar Sensitivity. Filed Mar. 21, 1972. Patented June 26, 1973. Not available NTIS.

Patent 3,743,624. Benzofuroisoquinoline Polymers and Method for Synthesizing Same. Filed Oct. 6, 1972. Patented June 26, 1973. Not available NTIS.

Patent 3,743,765. Redundant Area Coding System. Filed May 26, 1971. Patented July 3, 1973. Not available NTIS.

Patent 3,743,955. Radiation Hardening Read Preamplifier. Filed July 13, 1971. Patented July 3, 1973. Not available NTIS.

Patent 3,744,295. Photochromic-Thermochromic Coating Composition. Filed Nov. 24, 1971. Patented July 10, 1973. Not available NTIS.

Patent 3,745,567. Wideband Radar Receiver Protective Apparatus. Filed Mar. 9, 1972. Patented July 10, 1973. Not available NTIS.

Patent 3,745,568. Spectrum Analysis Radar. Filed Apr. 11, 1972. Patented July 10, 1973. Not available NTIS.

Patent 3,745,785. Solid Cryogen Heat Transfer Apparatus. Filed Jan. 17, 1972. Patented July 17, 1973. Not available NTIS.

Patent 3,745,877. Intervalometer for Parachute Flare Launcher. Filed Dec. 22, 1971. Patented July 17, 1973. Not available NTIS.

Patent 3,747,004. Injection-Locked Laser Stabilizer. Filed May 14, 1971. Patented July 17, 1973. Not available NTIS.

Patent 3,748,206. Cured Polyferrocenylenes and Process for Curing. Filed May 26, 1971. Patented July 24, 1973. Not available NTIS.

Patent 3,753,472. Light Pressure Operated Microbalance System. Filed Aug. 12, 1971. Patented Aug. 21, 1973. Not available NTIS.

Patent 3,753,616. Laser Doppler Velocimeter Detector. Filed Nov. 22, 1971. Patented Aug. 21, 1973. Not available NTIS.

Patent 3,756,779. Spectral Analysis of Ketoximes. Filed Nov. 16, 1971. Patented Sept. 4, 1973. Not available NTIS.

Patent 3,757,412. Lanthanide Isopropoxides and Preparation of Same. Filed Oct. 20, 1971. Patented Sept. 11, 1973. Not available NTIS.

Patent 3,761,303. Method for Impregnating Microcracks in Chromium Plating. Filed Dec. 7, 1971. Patented Sept. 25, 1973. Not available NTIS.

Patent 3,762,644. Stress Relief Grooves for Pyrolytic Graphite Coated Rocket Nozzle Inserts. Filed May 11, 1970. Patented Oct. 2, 1973. Not available NTIS.

Patent 3,764,830. Stripline Video Pulse Generator. Filed June 27, 1972. Patented Oct. 9, 1973. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE

Chief, Research Agreements and Patent Mgmt. Branch, Federal Building

General Services Division, Agricultural Research Service, Hyattsville, Md. 20782

Patent application 306,770. Non-Aqueous Process for Reacting Sultones With Cellulosic Materials. Filed Nov. 15, 1972. PC $4/M.F $1.45.

Patent application 309,833. Treatment of Cotton With Glycidyl Methacrylate Using Ionizing Radiation. Filed Nov. 27, 1973. PC $4/MF $1.45.

Patent application 311,609. d,d'-BIS-(Phosphono) Dicarboxylic Acid Derivatives. Filed Dec 4, 1972. PC $4/MF $1.45.

Patent application 314,651. Use of Sodium Bisulfite in an Improved Process for the Treatment of Cellulose Textile Materials With Carbamate Finishing Agents and Sulfurous Acid. Filed Dec. 13, 1972. PC $4/MF $1.45.

Patent 3,676,052. Polypropylene Glycols and Substituted Polypropylene Glycols are Used in Conjunction With Crosslinking Agency to Produce Durable Press Fabrics With Improved Soil Release Performance. Filed Nov. 3, 1969. Patented July 11, 1972. Not available NTIS.

Patent 3,676,056. High Energy Radiation Stabilization of Cellulose Obtained by Esterifying With Thenoyl Chloride. Filed Apr. 30, 1971. Patented July 11, 1972. Not available NTIS.

Patent 3,677,692. High Energy Radiation Stabilization of Cellulose Obtained by Esterifying With Furoyl Chloride. Filed Apr. 30, 1971. Patented July 18, 1972. Not available NTIS.

Patent 3,678,537. Card Cover With Fiber Conveying Air Flow Channel. Filed June 26, 1970. Patented July 25, 1972. Not available NTIS.

Patent 3,680,219. Process for Steam Straightening and Kiln Drying Lumber. Filed Sept. 22, 1970. Patented Aug. 1, 1972. Not available NTIS.

Patent 3,681,268. Mastic Adhesive Composition Containing Zinc Salt of Formaldehyde-Modified Rosin. Filed Feb. 27, 1970. Patented Aug. 1, 1972. Not available NTIS.

Patent 3,685,100. Card Cover With Fiber-Conveying Channels. Filed June 26, 1970. Patented Aug. 22, 1972. Not available NTIS.

Patent 3,694,256. Process for Rendering Cellulosic Textiles Flame Retardant. Filed Jan. 12, 1971. Patented Sept. 26, 1972. Not available NTIS.

Patent 3,694,397. Hexachlorocyclopentadiene Adducts of Unsaturated Amides. Filed Dec. 16, 1971. Patented Sept. 26, 1972. Not available NTIS.

Patent 3,696,603. Electrostatic Fiber Collecting and Yarn Spinning Apparatus. Filed Apr. 12, 1971. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,697,316. Fire-Resistant Organic Products and Method for Production. Filed May 7, 1971. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,698,854. Process for Producing Flame Resistant Organic Textiles. Filed June 24, 1970. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,698,857. Fibrous Crosslinked (Aminoalkyl) Aminochlorodeoxy-Cellulose and Method of Preparation. Filed Jan. 26, 1971. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,699,146. Synthesis of Methyl Malvalate and Methyl 5,6-Methano-5-Undecenoate. Filed Mar. 31, 1970. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,701,626. Process for Rendering Cellulosics Water- and Oil-Repellent. Filed Dec. 23, 1970. Patented Oct. 31, 1972. Not available NTIS.

Patent 3,702,230. Use of Polymer Additive to Improve the Optical Brightener Absorption Characteristics of Durable-Press Fabrics. Filed Jan. 7, 1971. Patented Nov. 7, 1972. Nat available NTIS.

Patent 3,702,232. Tris(2-Chloroethyl) Phosphoramide used as a Crosslinking Agent for Cellulosic Compositions. Filed Nov. 19, 1971. Patented Nov. 7, 1972. Not available NTIS.

Patent 3,702,754. Fibrous (Carboxyalkylthio) and (Carboxyarylthio) Chlorodeoxycelluloses and Method of Preparation. Filed Jan. 24, 1971. Patented Nov. 14, 1972. Not available NTIS.

Patent 3,702,857. Decolorization of Cottonseed Oil With Ferric Chloride. Filed Mar. 10, 1970. Patented Nov. 14, 1972. Not available NTIS.

Patent 3,704,257. N-Cyclohexyl-N-(2-Cyanoethyl) Oleamide as a Plasticizer. Filed Nov. 13, 1969. Patented Nov. 28, 1972. Not available NTIS.

Patent 3,705,004. Pad Bath Formulation of Iron Salt, Potassium Permanganate, Ammonium Oxalate and Zirconyl Ammonium Carbonate. Filed Mar. 21, 1972. Patented Dec. 5, 1972. Not available NTIS.

Patent 3,706,762. Fungicidal Method. Filed May 7, 1971. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,708,450. Elastomeric Polyester-Derived Polyurethanes Containing 12-Hydroxymethyl-Tetrahydroabietanol. Filed Dec. 16, 1971. Patented Jan. 2, 1973. Not available NTIS.

Patent 3,714,144. Process for the Production of Sucrocid-Esters of Fatty Acids. Filed May 29, 1969. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,714,813. Bispyrroildone-Formaldehyde Addition Products and Their Use as Crosslinking Agents With Cellulose. Filed Feb. 17, 1971. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,715,910. Determination of Residual Solvent in Oilseed Meals and Flours by a Volatization Procedure. Filed Jan. 26, 1971. Patented Feb. 13, 1973. Not available NTIS.

Patent 3,716,540. Hexachloropentadiene Adducts of Unsaturated Piperazine Amides. Filed Dec. 16, 1971. Patented Feb. 13, 1973. Not available NTIS.

Patent 3,719,448. Organo-Phosphorus Compounds Containing Perfluoroalkyl Radicals and Their Application to Cellulosic Textiles. Filed June 9, 1971. Patented Mar. 6, 1973. Not available NTIS.

Patent 3,722,202. Spinning a Filament-Wrapped Staple Fiber Core Yarn. Filed Sept. 24, 1971. Patented Mar. 27, 1973. Not available NTIS.

Patent 3,723,057. Process for Stabilizing Organophosphorus Solutions and Imparting Rot and Flame Resistance to Organic Textile Materials. Filed July 19, 1971. Patented Mar. 27, 1973. Not available NTIS.

Patent 3,723,133. Method of Preparing a Dehydrated Deacidified Citrus Juice Product. Filed Feb. 7, 1972. Patented Mar. 27, 1973. Not available NTIS.

Patent 3,724,243. Chainless Mercerizer Suitable for Use With Liquid Ammonia. Filed May 7, 1971. Patented Apr. 3, 1973. Not available NTIS.

Patent 3,731,466. Continuous Flow Multiple Trap for Low Temperature Reduced Pressure Gas Chromatography. Filed July 14, 1971. Patented May 8, 1973. Not available NTIS.

Patent 3,732,179. Process for Preparing Polyurethanes From Hydroxy-Methylated Derivatives of Resin Acids. Filed Mar. 15, 1972. Patented May 8, 1973. Not available NTIS.

Patent 3,734,684. Flame Retardant Phosphorus Containing Fibrous Products and Method for Production. Filed May 7, 1971. Patented May 22, 1973. Not available NTIS.

Patent 3,737,453. 2-Aminoethanol Salt of Dehydroabietic Acid. Filed Dec. 2, 1970. Patented June 5, 1973. Not available NTIS.

Patent 3,745,020. Process for Preparing Citrus Puree. Filed May 5, 1971. Patented July 10, 1973. Not available NTIS.

Patent 3,745,191. Flame-Resistant Organic Textiles Through Treatment With Halogen Containing Soluble Methylol Phosphine Adducts. Filed May 7, 1971. Patented July 10, 1973. Not available NTIS.

Patent 3,746,731. Process for Refining Glyceride Oils and Fats. Filed Dec. 31, 1969. Patented July 17, 1973. Not available NTIS.

Patent 3,749,552. Simultaneous Introduction of Quaternary Ammonium Salt Residues and Sulfone Residues Into Fibrous Cellulose. Filed Dec. 9, 1970. Patented July 31, 1973. Not available NTIS.

Patent 3,754,860. Wrinkle-Resistance Finishes for Cotton Fabric Using Citric Acid Derivatives for Soil Release. Filed Nov. 5, 1971. Patented Aug. 28, 1973. Not available NTIS.

Patent 3,754,932. Proteare and Pectmare Additive to Citrus Juices. Filed Apr. 16, 1971. Patented Aug. 28, 1973. Not available NTIS.

Patent 3,755,418. Finishing Agents With Reduced Formaldehyde Odor for Cellulose Containing Textile Materials. Filed Sept. 18, 1970. Patented Aug. 28, 1973. Not available NTIS.

Patent 3,746,722. Hexachlorocyclopentadiene Adducts of Unsaturated Amides. Filed Dec. 16, 1971. Patented July 17, 1973. Not available NTIS.

Patent 3,756,777. Pad-Cure Process for the Preparation of DEAE-Cotton. Filed July 30, 1971. Patented Sept. 4, 1973. Not available NTIS.

DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th and C Sts. NW., Washington, D.C. 20240

Patent application 419,830. Process for Making Preformed Support Structures. Filed Nov. 28, 1973. PC $4/MF $1.45.

Patent application 789,577. Personal Dust Sampler Holder. Filed Jan. 7, 1969. PC $4/MF $1.45.

Patent 2,821,499. Method for Controlling Sea Lampreys (Petromyzon Marinus). Filed May 9, 1956. Patented Jan. 28, 1958. Not available NTIS.

Patent 2,826,897. Fish Diversion Louver System. Filed Dec. 1, 1954. Patented Mar. 18, 1958. Not available NTIS.

Patent 2,889,528. Standardizing Strain Gage. Filed Feb. 27, 1957. Patented June 2, 1959. Not available NTIS.

Patent 2,893,633. Bi-Directional Electric Counting System. Filed Oct. 10, 1957. Patented July 7, 1959. Not available NTIS.

Patent 2,913,846. Apparatus for Controlling the Upstream Movement of Fish. Filed Mar. 24, 1958. Patented Nov. 24, 1959. Not available NTIS.

Patent 2,955,068. Method for Controlling Boring Sponges and Other Pests of Commercial Mollusks. Filed Oct. 10, 1958. Patented Oct. 4, 1960. Not available NTIS.

Patent 2,962,632. Overload Protection Device for Direct Current Generators. Filed Jan. 19, 1959. Patented Nov. 29, 1960. Not available NTIS.

Patent 2,979,442. Process for the Prevention of Scale in Sea Water Evaporators. Filed June 28, 1957. Patented Apr. 11, 1961. Not available NTIS.

Patent 3,016,296. Method for Reduction of Refractory Metal Oxide to Metal by Calcium Carbide. Filed Sept. 23, 1959. Patented Jan. 9, 1962. Not available NTIS.

Patent 3,028,008. Separation of Spodumene and Beryl by Flotation. Filed July 27, 1960. Patented Apr. 3, 1962. Not available NTIS.

Patent 3,031,287. Process for Manufacturing Mixtures of Hydrogen, Carbon Monoxide, and Methane. Filed June 23, 1958. Patented Apr. 24, 1962. Not available NTIS.

Patent 3,045,861. Closure for Evacuated and/or Pressurized Vessel. Filed Dec. 1, 1959. Patented July 24, 1962. Not available NTIS.

Patent 3,046,215. Electrolytic Cell With Vertical Mercury Electrode. Filed May 26, 1959. Patented July 24, 1962. Not available NTIS.

Patent 3,054,243. High Temperature Electrostatic Precipitator and Method of Operation. Filed Sept. 16, 1960. Patented Sept. 18, 1962. Not available NTIS.

Patent 3,054,685. Fluormica-Fluoramphibole Ceramics and Processes of Making Same. Filed Feb. 9, 1960. Patented Sept. 18, 1962. Not available NTIS.

Patent 3,069,255. Production of High Purity Titanium by Metallic Sodium Reduction of Titanic Halide. Filed Nov. 25, 1957. Patented Dec. 18, 1962. Not available NTIS.

Patent 3,088,805. A Method for Producing Zirconium Diboride. Filed Aug. 21, 1959. Patented May 7, 1963. Not available NTIS.

Patent 3,088,909. Mixed Solvents for Saline Water Extraction. Filed Feb. 9, 1961. Patented May 7, 1963. Not available NTIS.

Patent 3,107,215. Flotation Process for Concentration of Pollucite Ores. Filed Jan. 25, 1962. Patented Oct. 15, 1963. Not available NTIS.

Patent 3,108,716. Pressure Control Mechanism. Filed Sept. 15, 1961. Patented Oct. 29, 1963. Not available NTIS.

Patent 3,113,017. Method for Reacting Titanic Chloride With an Alkali Metal. Filed July 6, 1960. Patented Dec. 3, 1963. Not available NTIS.

Patent 3,128,744. Method for Investigating the Migratory Habits of Macro-Organisms. Filed Jan. 2, 1963. Patented Apr. 14, 1964. Not available NTIS.

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Patent 3,140,148. Method of Treating Exhaust Gases With Urania-Containing Catalysts. Filed July 26, 1961. Patented July 7, 1964. Not available NTIS.

Patent 3,148,577. Rock Bolt Anchored by Explosive Forming. Filed Feb. 27, 1962. Patented Sept. 15, 1964. Not available NTIS.

Patent 3,162,257. Barrel-Type Soil Auger. Filed Oct. 12, 1962. Patented Dec. 22, 1964. Not available NTIS.

Patent 3,164,905. Universal Tracing Table. Filed Aug. 16, 1961. Patented Jan. 12, 1965. Not available NTIS.

Patent 3168,814. Automatic Water Control Gate. Filed Sept. 14, 1961. Patented Feb. 9, 1965. Not available NTIS.

Patent 3,175,459. Meter for Optically Measuring Fluid Current Velocity. Filed Oct. 1, 1962. Patented Mar. 30, 1965. Not available NTIS.

Patent 3,285,765. Cellulose Acetate Reverse Osmosis Desalination Membranes Cast From Nonaqueous Solutions and a Method of Making the Same. Filed Oct. 18, 1965. Patented Nov. 15, 1966. Not available NTIS.

Patent 3,289,753. Use of Gold Surfaces to Promote Dropwise Condensation. Filed Nov. 2, 1964. Patented Dec. 6, 1966. Not available NTIS.

Patent 3,289,754. Use of Silver Surfaces to Promote Dropwise Condensation. Filed Nov. 2, 1964. Patented Dec. 6, 1966. Not available NTIS.

Patent 3,290,286. Partially Hydrolyzed Cellulosic Reverse Osmosis Membranes and Methods of Preparing the Same. Filed Oct. 18, 1965. Patented Dec. 6, 1966. Not available NTIS.

Patent 3,291,400. Bacteria Disintegrator. Filed Sept 23, 1963. Patented Dec. 13, 1966. Not available NTIS.

Patent 3,305,091. Method of Separating Liquid-Solid Suspensions Into Individual Phases. Filed Apr. 20, 1965. Patented Feb. 21, 1967. Not available NTIS.

Patent 3,332,894. Polyvinyl Carbonate Desalination Membrane and a Method of Producing the Same. Filed Dec. 6, 1966. Patented July 25, 1967. Not available NTIS.

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Patent 3,384,451. Production of Spherical Granules of Alkali Earth Phosphate Salts. Filed Oct. 22, 1965. Patented May 21, 1963. Not available NTIS.

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Patent 3,463,717. Reference and Glass Electrodes Capable of Withstanding High Pressures. Filed Jan. 7, 1966. Patented Aug. 26, 1969. Not available NTIS.

Patent 3,480,144. Process for Removing Phosphorus From Waste Water. Filed May 3, 1968. Patented Nov. 25, 1969. Not available NTIS.

Patent 3,481,695. Process for Extracting Aluminum Values From Oil Shale. Filed Jan. 7, 1969. Patented Dec. 2, 1969. Not available NTIS.

Patent 3,482,374. Process for Electrostatic Precipitation. Filed Oct. 3, 1967. Patented Dec. 9, 1969. Not available NTIS.

Patent 3,992,884. Process for the Removal of Sulfur Oxides From Gases. Filed Oct. 7, 1959. Patented July 18, 1961. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINSTRATION
Assistant General Counsel for Patent Matters
NASA—Code GP–2
Washington, D.C. 20546

Patent application 416,135. Simultaneous Acquisition of Tracking Data From Two Stations. Filed Nov. 15, 1973. PC $3.25/MF $1.45.

Patent application 419,747. Position Determination Systems. Filed Nov. 28, 1973. PC $3/MF $1.45.

Patent application 420,813. Inert Gas Metallic Vapor Laser. Filed Dec. 3, 1973. PC $3.25/MF $1.45.

Patent application 433,968. Diode-Quad Bridge Circuit Means. Filed Jan. 16, 1974. PC $3/MF $1.45.

Patent application 436,313. Anthropomorphic Master/Slave Manipulator System. Filed Jan. 24, 1974. PC $4/MF $1.45.

Patent 3,732,297. Inherent Redundancy Electric Heater. Patented May 8, 1973. Not available NTIS.

Patent 3,777,552. Ultrasonic Scanning System for In-Place Inspection of Brazed Tube Joints. Patented Dec. 11, 1973. Not available NTIS.

Patent 3,780,827. Gas Turbine Exhaust Nozzle. Patented Dec. 25, 1973. Not available NTIS.

Patent 3,780,966. Attitude Sensor. Patented Dec. 25, 1973. Not available NTIS.

Patent 3,781,111. Short Range Laser Obstacle Detector. Patented Dec. 25, 1973. Not available NTIS.

Patent 3,781,549. Use of Thin Film Light Detector. Patented Dec. 25, 1973. Not available NTIS.

Patent 3,781,562. Mossbauer Spectrometer Radiation Detector. Patented Dec. 25, 1973. Not available NTIS.

Patent 3,781,902. Recorder/Processor Apparatus. Patented Dec. 25, 1973. Not available NTIS.

Patent 3,781,958. Method of Making Rolling Element Bearings. Patented Jan. 1, 1974. Not available NTIS.

Patent 3,782,177. Method and Apparatus for Nondestructive Testing. Patented Jan. 1, 1974. Not available NTIS.

Patent 3,782,181. Dual Measureemnt Ablation Sensor. Patented Jan. 1, 1974. Not available NTIS.

Patent 3,782,334. Automatic Real-Time Pair-Feeding System for Animals. Patented Jan. 1, 1974. Not available NTIS.

Patent 3,782,825. Method and Apparatus for Checking the Stability of a Setup for Making Reflection Type Holograms. Patented Jan. 1, 1974. Not available NTIS.

Patent 3,782,904. Compact Hydrogenator. Patented Jan. 1, 1974. Not available NTIS.

Patent 3,783,354. Phase Protection System for AC Power Lines. Patented Jan. 1, 1974. Not available NTIS.

Patent 3,783,399. Full Wave Modulator-Demodulator Amplifier Apparatus. Patented Jan. 1, 1974. Not available NTIS.

Patent 3,783,443. Ejectable Underwater Sound Source Recovery Assembly. Patented Jan. 1, 1974. Not available NTIS.

[FR Doc. 74, 8653 ; Filed 4–15–74 ; 8 :45 am]

Disclaimers

Design No. 225,474.—*Paul E. Brooks*, Detroit, Mich. POCKET COMB. Patent dated Dec. 12, 1972. Disclaimer filed Nov. 30, 1971, by the inventor.

Hereby disclaims the portion of the term of the patent subsequent to Apr. 21, 1984.

3,651,349.—*Dawon Kahng*, Bridgewater Township, Somerset County, and *Edward Haig Nicollian*, Murray Hill, N.J. MONOLITHIC SEMICONDUCTOR APPARATUS ADAPTED FOR SEQUENTIAL CHARGE TRANSFER. Patent dated Mar. 21, 1972. Disclaimer filed Apr. 4, 1974, by the assignee, *Bell Telephone Laboratories, Incorporated.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,757,268.—*John M. Genovese*, Trenton, N.J. SELF-GROUNDING RECEPTACLE. Patent dated Sept. 4, 1973. Disclaimer filed Mar. 28, 1974, by the assignee, *Circle F Industries, Inc.*

Hereby enters this disclaimer to claim 1 of said patent.

3,767,518.—*Duane H. Beninga*, Arvada, and *Hugh P. Gibbons*, Boulder, Colo. ORGANIC RESIN GLASS COMPOSITE AND METHOD FOR MAKING SAME. Patent dated Oct. 23, 1973. Disclaimer filed Mar. 28, 1974, by the assignee, *Coors Porcelain Company.*

Hereby disclaims the portion of the term of the patent subsequent to Sept. 21, 1988.

Errata

All reference to Tsuyoshi Kutino, Nippon Kokan Kabushiki Kaisha, Hidehisa Yamagishi, and Fumitoshi Yokoi as the patentees of Patent Number 3,703,407 appearing on pages PI 11, 14, and 22, respectively, in the OFFICIAL GAZETTE of November 21, 1972, should be deleted as the patent issued to William James Hannan, John Patrick Russell, Arthur Herbert Firester and the RCA Corporation.

All reference to Jerry L. Malis and Marvin E. Rosenthale as patentees and American Home Products Corporation as assignee to Patent Number 3,740,436 appearing on pages PI 22, 30, and 2, respectively, in the OFFICIAL GAZETTE of June 19, 1973, should be deleted as the patent issued to James G. Rigsby and the Olin Corporation.

All reference to Defensive Publication T911,014 to Thomas A. K. Watson of Montreal, Canada, for System for a Rotary Mechanical Translation Device, appearing in the OFFICIAL GAZETTE of June 26, 1973, should be deleted since no defensive publication should have been published.

All reference to Patent Number 3,775,804 to Ralph H. Hoener, Jr. for Window Wall Washing Device for High-Rise Buildings, appearing in the OFFICAL GAZETTE of December 4, 1973, should be deleted since no patent should have been granted.

All reference to Patent Number 3,781,909 to Edwin Ira Stearns for Reduced Iteration in Computer Color Matching, appearing in the OFFICIAL GAZETTE of December 25, 1973 should be deleted since no patent should have been granted.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF APRIL 13, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-07-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids, Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-23-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	4-24-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	5-04-73
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	2-05-73
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	9-05-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	11-06-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	2-23-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	1-04-73
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	4-27-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	4-27-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	9-17-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	5-02-73
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—Director (Vacant). Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	5-07-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	7-11-73
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—Director (Vacant). Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	1-22-73

Expiration of patents: The patents within the range of numbers indicated below expire during April 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,787,000 to 2,790,970, inclusive
Plant Patents..... Numbers 1,586 to 1,597, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED MAY 7, 1974

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T922,001
PROCESS FOR TOPICALLY TREATING POLYESTER FIBER AND FABRICS WITH A DURABLE FLAME RETARDANT COMPOSITION

John Richard Schwier, 437 Kitty Lane, Cincinnati, Ohio 45328, and Kenneth Ray Barton, 201 Claymore Drive, Kingsport, Tenn. 37663

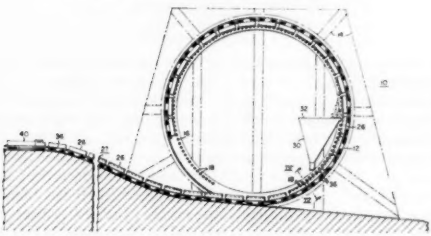
Filed Apr. 10, 1973, Ser. No. 349,889
Int. Cl. C09k *3/28*
U.S. Cl. 117—136
No Drawing. 16 Pages Specification

Process in which polyester fiber or fabric is treated with aqueous solution containing tetrakis(hydroxymethyl)phosphonium halide, triazines and carbamic acid derivatives, dried, and then cured to produce a polymeric coating on the polyester surface. The polymeric coating is durable to severe washings and repeated dry cleanings and renders the polyester substantially flame retardant.

T922,002
BULK HAULING FREIGHT CAR UNLOADING APPARATUS AND METHOD OF OPERATION

Paul W. McCormick, 723 Oak St., Johnstown, Pa. 15902

Filed Aug. 13, 1973, Ser. No. 387,804
Int. Cl. B25g *67/34*
U.S. Cl. 214—62 R
5 Sheets Drawing. 8 Pages Specification



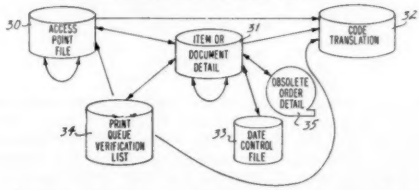
An apparatus for unloading bulk cargo from a train of freight cars of the gondola or hopper type is provided. The unloading apparatus comprises a helical loop of track having a horizontal axis and with a loop extending vertically and positioned such that a train of a large number of open top hopper cars is pushed through the loop in a manner wherein the open tops of the cars always faces the center of the loop while the cars are passing through the loop. A second, inner loop of guide devices is provided to engage the cars adjacent the open end thereof in order to support the cars while they are inverted or partially inverted as they pass through the loop. A load retention device is provided along a portion of the loop to retain the cargo in the cars as the cars are being partially inverted by passing through the loop to prevent premature dumping of the cargo.

In certain embodiments, means are provided for adjusting the distance between the inner and outer loops to accommodate different car sizes.

T922,003
LIBRARY MANAGEMENT SYSTEM

Robert W. Alexander, Jr., Los Gatos, John M. Bell and John A. Christensen, San Jose, Roger W. Harvey, Santa Cruz, Katherine A. Hitchcock, Atherton, Robert W. Martin, San Jose, and Alice K. McMullen, Campbell, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of application Ser. No. 327,252, Jan. 26, 1973, which is a continuation of application Ser. No. 150,853, June 7, 1971. This application Sept. 17, 1973, Ser. No. 398,140
Int. Cl. G06f *9/12*
U.S. Cl. 444—1
51 Sheets Drawing. 284 Pages Specification



A file structure for an on-line system. A central processing system having core and direct access storage devices and input/output terminals is programmed for on-line applications such as inventory control, manufacturing process control, library management. The file structure for those applications includes an item detail file including a logical record for each individual item in the inventory, an access point file including inverted lists of item details having search or control significance, a code translation file having alphameric translations of coded data in the other files. Also included may be a print queue/verification file and date control file. Each file includes one or more index and data files. Forward and reverse indexing connects the files through use of implicit pointers and item numbers. On-line updating of record detail is simultaneously performable with review of that record. Events having future significance are triggered automatically. Logical and physical overflow records are accommodated, as are variable length logical records built on variable length counters. Last-in/last-out updating of logical record lists together with reverse order data fields and length/sequence fields optimizes "get" time. The application functions include ordering, receiving, cataloging, circulating, searching, and file maintaining.

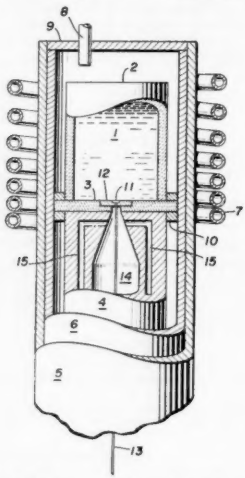
T922,004
ORIFICE STRUCTURE IN APPARATUS FOR EXTRUDING MOLTEN METALS

Jerome J. English, Cary, and Nicholas K. Harakas and Bernhard T. Junker, Raleigh, N.C., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 1, 1973, Ser. No. 412,370
Int. Cl. B22d *11/00*
U.S. Cl. 164—82
1 Sheet Drawing. 10 Pages Specification

An improved orifice structure is provided in an apparatus for extruding fine diameter wire. In the prior prac-

tice, repeated orifice failure in such apparatus had been experienced when extruding steel containing melts, such as alloys of steel and aluminum, which must be processed at temperatures in excess of 1500° C. The cause of such failure was largely due to an insufficient high temperature strength of the ceramic material from which the orifice structure was constituted. It has now been found that this problem is overcome when the orifice defining element consists of a hot-pressed beryllium oxide ceramic having a density of from 2.9 gm./cm.^{3} to 3.0 gm./cm.^{3}



T922,005
FLUORIDE SALTS AS DEHYDROCHLORINATING AGENTS IN THE PREPARATION OF CHLOROPRENE OR 2,3-DICHLORO-1,3-BUTADIENE

Paul Clayton Briggs, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 28, 1973, Ser. No. 419,892
Int. Cl. C07c *21/20*
U.S. Cl. 260—655
No Drawing. 13 Pages Specification

Chloroprene is prepared in high yields and without the formation of brine by reacting 3,4-dichloro-1-butene with cesium fluoride, potassium fluoride, an organic quaternary ammonium fluoride, a mixture of cesium fluoride and potassium fluoride, or a mixture of cesium fluoride and sodium fluoride, said reaction being conducted in an aprotic organic solvent.

In the alternative embodiment of this invention 2,3-dichlorobutadiene is similarly prepared from 2,3,4-trichloro-1-butene or meso-1,2,3,4-tetrachlorobutane.

The aprotic solvents useful in this invention are polar organic materials which are liquid under the conditions of the reaction and which form a homogeneous phase with the organic chlorine-containing starting material. The fluorides are only slightly soluble in the solvent, but the solvent should be one which is capable of effectively solvating the cation while leaving the fluoride ion unsolvated in solution. Hydrogen-bonding solvents, such as water and the alcohols, are ineffective.

Suitable solvents include, for example, aliphatic carboxylic acid amides, aliphatic sulfones and sulfoxides, and hexaalkyl phosphoric triamides.

The temperature of the reaction is conveniently from about 25° C. up to about 150° C. In general, the preferred range is about 50° to about 125° C. Temperatures of around 90° to about 110° C. are usually most satisfactory.

T922,006
METHOD FOR PREPARING FIRE RETARDANT POLYESTER FIBERS

Winston J. Jackson, Jr., 4408 Greensprings Circle 37664, and John R. Caldwell, 404 Colonial Heights 37663, both of Kingsport, Tenn.

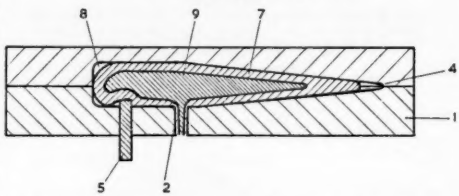
Filed Mar. 30, 1973, Ser. No. 346,511
Int. Cl. C09d *5/18*; C09k *3/28*
U.S. Cl. 117—136
No Drawing. 12 Pages Specification

Disclosed is a process for preparing fire retardant polyester fibers comprising applying to the surface of the polyester fiber an organic bromine compound, and subsequently heating the fiber in a temperature range of about 160° to about 220° C. to diffuse into the fiber structure a sufficient quantity of the organic bromine compound to result in, based on the weight of the fiber, 0.3 to 3 weight percent bromine in the fiber structure. Poly(ethylene terephthalate) and poly(1,4-cyclohexylenedimethylene terephthalate) fibers are particularly desirable polyester fibers. Tris(2,3-dibromopropyl) phosphate is a particularly desirable organic bromine compound.

T922,007
INJECTION MOULDING

Alan George Smith, Harrow, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Apr. 5, 1973, Ser. No. 348,143
Claims priority, application Great Britain, Apr. 20, 1972, 18,378/72
Int. Cl. B29d *27/00*
U.S. Cl. 264—55
5 Sheets Drawing. 18 Pages Specification



Injection moulding process with sequential injection of dissimilar materials into a mould cavity defined by at least two mould members in at least one of which a retractable member is slidably mounted, the retractable member being initially in the non retracted position, preferably protruding beyond the surface of the mould member into the cavity, and said member being retracted before or during injection of the second material but before the mould cavity is filled. This enables the distribution of the first and second materials inside the mould cavity to be modified.

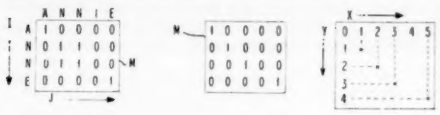
T922,008
DATA PROCESSOR PROGRAM FOR DETERMINING CHARACTER STRING SIMILARITY

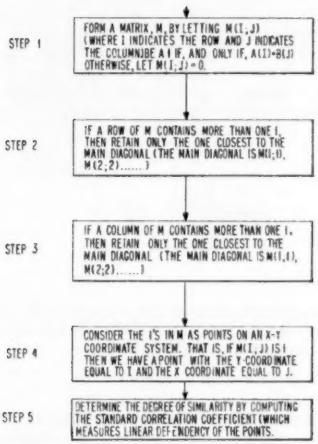
Donald C. Gause, Owego, and Eduardo Kellerman and Gerald L. Rouse, Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of application Ser. No. 154,093, June 17, 1971. This application Oct. 18, 1973, Ser. No. 407,733
Int. Cl. G05b *19/28*; G06f *7/34*
U.S. Cl. 444—1
4 Sheets Drawing. 27 Pages Specification

An improved program method is shown for determining the similarity of two character strings where they are not necessarily equal character by character. Each character of one character string is compared with each character of the other character string, and the results are stored in a matrix. Each row of the matrix corresponds to a respective one of the characters of the first string, and each column of the matrix corresponds to a respective character of the other string. A logical one value is

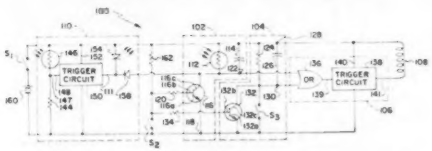
stored in each matrix position where corresponding characters of the first and second string are equal, and a logical zero is stored in each position where they are not equal. In the event that there is more than one logical one in each row (or in each column, or both), all of the logical ones in that row (or column, or both) except that which is closest to the major diagonal of the matrix are




STEP 1
FORM A MATRIX, M, BY LETTING M(I,J) (WHERE I INDICATES THE ROW AND J INDICATES THE COLUMN)BE A 1 IF, AND ONLY IF, A(I)=B(J) OTHERWISE, LET M(I,J)=0.
STEP 2
IF A ROW OF M CONTAINS MORE THAN ONE 1, THEN RETAIN ONLY THE ONE CLOSEST TO THE MAIN DIAGONAL (THE MAIN DIAGONAL IS M(1,1), M(2,2).....)
STEP 3
IF A COLUMN OF M CONTAINS MORE THAN ONE 1, THEN RETAIN ONLY THE ONE CLOSEST TO THE MAIN DIAGONAL (THE MAIN DIAGONAL IS M(1,1), M(2,2).....)
STEP 4
CONSIDER THE 1'S IN M AS POINTS ON AN X-Y COORDINATE SYSTEM. THAT IS, IF M(I,J) IS 1 THEN WE HAVE A POINT WITH THE Y COORDINATE EQUAL TO I AND THE X COORDINATE EQUAL TO J.
STEP 5
DETERMINE THE DEGREE OF SIMILARITY BY COMPUTING THE STANDARD CORRELATION COEFFICIENT (WHICH MEASURES LINEAR DEPENDENCY OF THE POINTS.

changed to logical zero. In the event that two logical ones in a row (or column, or both) are equidistant from the major diagonal, both may be retained. The remaining logical ones in the matrix are then considered as points on an X, Y coordinate system, and the standard correlation coefficient (which measures linear dependence) of the points is calculated to determine the degree of similarity between the two character strings. A decision that sufficient similarity exists to make a determination that a match has occurred may be based upon various known tests, for example, exceeding predetermined thresholds; or, in the event that a match is made against several character strings, the highest coefficient calculated can be determined as the match. The improved method can be used in programming areas such as inquiry (or query) systems and the job control language processor of an operating system. The program usually handles missing characters, transposed characters and other common errors. The program can be either a fixed or an adaptive type.

T922,009
SHUTTER CONTROL CIRCUIT FOR A PHOTOGRAPHIC CAMERA
Robert V. Alessi, 901 Elmgrove Road, Rochester, N.Y. 14650
Filed Oct. 24, 1973, Ser. No. 409,228
Int. Cl. G03b *7/08*
U.S. Cl. 354—31
1 Sheet Drawing. 17 Pages Specification



A photographic camera includes an electronic shutter control circuit for controlling a camera shutter mechanism to permit smear-free exposures. The shutter control circuit includes a timing device for closing the shutter, comprising a first timer responsive to prevailing scene light conditions and a second timer having a fixed predetermined time constant, the second timer being adapted to close the shutter after a fixed time interval to eliminate extended time exposures which occur under low scene light conditions. The shutter control circuit further includes a network for indicating the adequacy of scene light for obtaining a proper exposure within the fixed time interval. The network is coupled to the light responsive timer through a reversed biased diode to effectively render that timer incapable of controlling the shutter mechanism under low scene light conditions.

REISSUES

MAY 7, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,003

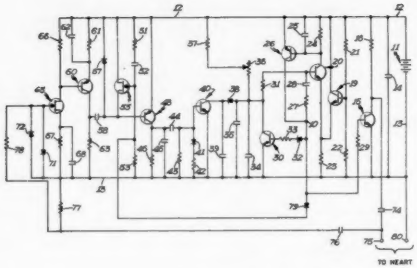
ELECTRONIC DEMAND HEART PACEMAKER WITH DIFFERENT PACING AND STANDBY RATES

David H. Gobeli, Minneapolis, Minn., assignor to Medronic, Inc., Minneapolis, Minn.

Original No. 3,656,487, dated Apr. 18, 1972, Ser. No. 1,178, Jan. 7, 1970, which is a continuation-in-part of abandoned application Ser. No. 832,706, June 12, 1969. Application for reissue June 30, 1972, Ser. No. 267,961

Int. Cl. A61n *1/36*

U.S. Cl. 128—419 P **20 Claims**



A demand type heart pacer which provides electronically generated stimulating pulses to the heart at a first frequency in the continued absence of natural heartbeats, but which inhibits output pulses once the natural heart rate exceeds the first frequency, and allows the heart to beat naturally at any rate above a second, lower frequency before again providing stimulating pulses, thereby creating a different standby frequency. The pacer also reverts to a third frequency in a non-demand type operation in the presence of an interfering electrical noise pattern.

28,004

CENTRIFUGAL ACTUATOR FOR LIMITED SLIP DIFFERENTIAL

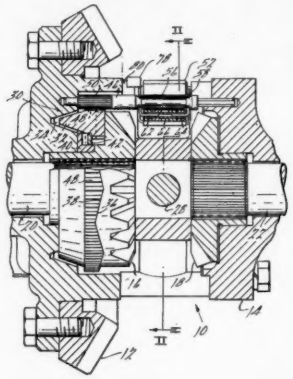
William C. Ottemann, Union Lake, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Original No. 3,606,803, dated Sept. 21, 1971, Ser. No. 858,700, Sept. 17, 1969. Application for reissue June 7, 1973, Ser. No. 367,860

Int. Cl. F16d *13/04;* **F16h** *1/44*

U.S. Cl. 74—711 **35 Claims**

A limited slip differential mechanism having a normally disengaged main clutch producing lock-up when activated, which is operated by means of an actuator device in turn activated by a predetermined level of differential action which is varied with the rate of change of levels of differential action. The actuator includes an actuator member which is rotationally driven by differential action and upon which spring-biased centrifugal weights are pivotally mounted and arranged so that at a predetermined velocity and acceleration of the actuator member one of the weights move outwardly and applies a braking force to the actuator member inhibiting its rotation. An arrangement is provided for actuation of the normally disengaged main clutch in response to this inhibited rotation, so that the differential action is uninhibited at



low levels of differential action. A high road speed cut-out of the actuator is also provided so that no lock-up will occur at relatively high road speeds.

28,005

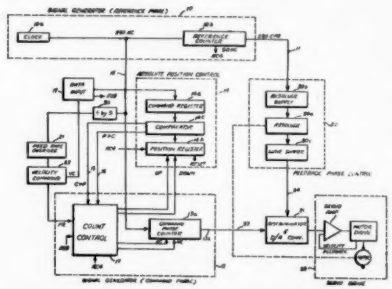
NUMERICAL POSITIONING CONTROL SYSTEM

William P. Wilson, Waynesboro, Va., assignor to General Electric Company

Original No. 3,400,314, dated Sept. 3, 1968, Ser. No. 459,410, May 27, 1965. Application for reissue Feb. 24, 1970, Ser. No. 13,800, which is a continuation of abandoned reissue application Ser. No. 835,892, June 12, 1969

Int. Cl. G05b *19/28*

U.S. Cl. 318—569 **17 Claims**



A positioning control system using absolute dimension programming and incremental position feedback from a single feedback transducer, and controlling the frequency

of a command phase counter of the type utilized in prior art contouring systems in accordance with the results of a comparison operation between the commanded and the actual position of the tool under control.

28,006

APPARATUS FOR VARIABLE SPEED PLAYBACK OF PLURAL TRACK RECORDS

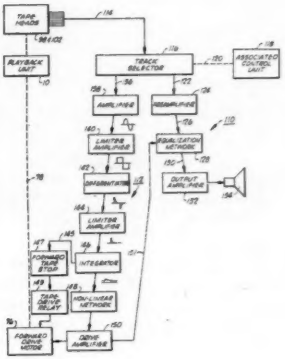
David D. Price, Jr., Oklahoma City, and Lawrence R. De Bell, Bethany, Okla., assignors to The Economy Company, David D. Price, Jr., and Ford C. Price, all of Oklahoma City, Okla., fractional part interest to each

Original No. 3,596,007, dated July 27, 1971, Ser. No. 755,573, Aug. 27, 1971. Application for reissue Apr. 27, 1972, Ser. No. 248,325

Int. Cl. G09b *5/04;* **G11b** *15/52*

U.S. Cl. 179—100.2 S **12 Claims**

An apparatus for playback of plural tracks of recorded information at selectively different track record speeds, the apparatus consisting of a record playback unit capable of playing back a selected one of plural record tracks each carrying a control signal of predetermined, constant frequency, and having control circuitry for receiving playback control signal and converting it to a DC control voltage proportional to frequency for use in controlling the record playback speed of the playback unit. The DC control voltage is applied through a nonlinear network to control a drive amplifier which, in turn, regulates the forward drive motor of the record playback unit to maintain the played-back control signal at is proper reference frequency value.



PLANT PATENTS

GRANTED MAY 7, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,541
APPLE TREE

Frank Paganelli, Yakima, Wash., assignor to Stark Bro's Nurseries & Orchards Co., Louisiana, Mo.

Filed Jan. 29, 1973, Ser. No. 327,824
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—35 **1 Claim**

1. A new and distinct variety of apple tree, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a spur type and general habit of tree growth similar to that of the apple variety "Starkrimson Red Delicious," the production of fruit which is similar in shape, size and flavor to the fruit of "Starkrimson Red Delicious," and a distinctive and attractive bright cherry red fruit color which develops as a blush like the fruit of "Starkrimson Red Delicious," but which is retained throughout the full harvest season contrary to other varieties, including "Starkrimson Red Delicious," which become a very dark red fruit color when fully tree-ripened.

3,542
MAPLE TREE

Virgil James Drake, Rte. 1, Hartford, Mich. 49057

Filed Jan. 23, 1973, Ser. No. 325,994
Int. Cl. A01h *5/12*
U.S. Cl. Plt.—51 **1 Claim**

A maple tree of the *Acer rubrum* type, having distinctively colored leaves turning from green to a colored border through shades of blue violet to red and yellow.

3,543
ROSE PLANT

Alain Meilland, Cap d'Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Mar. 15, 1973, Ser. No. 341,463
Claims priority, application Morocco, Mar. 22, 1972, 16,035
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—18 **1 Claim**

A rose plant of the hybrid tea class, whose vegetative type corresponds to that of the variety Meichim 0257 F., more generally known in the trade as the rose Carina (U.S. Plant Pat. No. 2,378), but of a more even pink and less crimson color, with a pink color on the reverse side of the petals.

3,544
ROSE PLANT

Roy L. Byrum, Richmond, Ind., assignor to Joseph H. Hill Company, Richmond, Ind.

Filed Feb. 15, 1973, Ser. No. 332,877
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—15 **1 Claim**

A new variety of hybrid tea rose capable of continuous and abundant production under greenhouse culture and distinguished by its vigorous and prolific growth with longer and stronger stems, the more constant intense color of its blooms which does not fade under extreme temperature or low light intensities, and by its improved propagation capabilities.

3,545
ROSE PLANT

Ralph George Leighty, deceased, late of Gainesville, Fla., by Rosa Maria Arguelles Leighty, executrix, Gainesville, Fla., assignor to Robert W. Hyde, doing business as Hyde's House of Roses, Crystal River, Fla.

Filed Jan. 2, 1973, Ser. No. 320,665
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—23 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by being substantially identical in all respects, including the vigorous, tall, well-branched, well-filled and well-shaped habit of the rose variety known as "Gene Boerner" (Plant Pat No. 2,885) except for its flower color, said flower color being essentially nearly pure white uniformly throughout during hot weather, but becoming very slightly suffused with light pink or peachy pink tints during cold weather, as distinguished from the normal bright pink flower color of "Gene Boerner" when grown under the same conditions.

3,546
ROSE PLANT

Marie-Louis Meilland, Cap d'Antibes, France, assignor to C. H. Stuart & Company, Inc., Newark, N.Y.

Filed Aug. 18, 1972, Ser. No. 281,929
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—28 **1 Claim**

A rose plant of the floribunda class originated by crossing Tamango (U.S. Plant Pat. No. 2,857) with an unnamed and unpatented rose seedling which resulted from a crossing of Fire King (U.S. Plant Pat. No. 1,758) with Banzai (U.S. Plant Pat. No. 2,142).

PATENTS

GRANTED MAY 7, 1974

GENERAL AND MECHANICAL

3,808,604

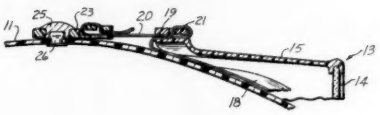
HELMET WITH QUICK RELEASE MEANS FOR STORING GOGGLES THEREON

Daniel G. Rose, 2321 Sunset Dr., Ventura, Calif.

Filed Dec. 27, 1971, Ser. No. 212,169

Int. Cl. A61f *9/02*

U.S. Cl. 2—10 **5 Claims**



Improved goggles and quickly adjustable fast action release means for storing the goggles on a helmet when not in use. The fastener means is attachable to the goggles or to cover means for the goggles and is operable to hold the goggles compactly stored against the exterior of the helmet crown with the head-embracing goggle-mounting band captive within the goggle shroud. The cover conforms to adjacent surfaces of the helmet and conceals and protects the goggles while preserving the same appearance whether the goggles are present or absent.

3,808,605

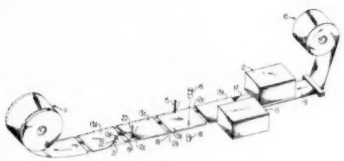
A SERIES OF SHIRT CUFF ASSEMBLIES

Richard D. Campbell, 135 Yaupon Ter., P.O. Box 296, Morehead City, N.C.

Division of Ser. No. 69,526, Sept. 4, 1970, Pat. No. 3,670,679. This application June 6, 1972, Ser. No. 260,210

Int. Cl. A41b *7/00*

U.S. Cl. 2—123 **2 Claims**



A shirt sleeve cuff making method and apparatus wherein a continuous length of cuff lining material is passed through tandem sewing heads, and pairs of cuff panels are placed upon the lining material and are sewn along their aligned edges to one edge of the lining material by one sewing head and the overlying edge of the lower cuff panel of each pair is folded downwardly about the opposite edge of the lining material and sewn thereto by the other sewing head. The continuous lining material with the cuff panels sewn thereto are then passed to a second sewing station where the lining material is cut between the pairs of cuff panels and the edges of the cuff panels adjacent the cut in the lining material are sewn to the lining material.

3,808,606

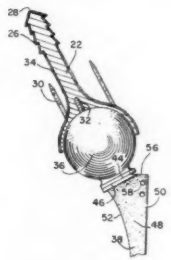
BONE IMPLANT WITH POROUS EXTERIOR SURFACE

Raymond G. Tronzo, 133 S. 36th St., Philadelphia, Pa.

Continuation-in-part of Ser. No. 228,052, Feb. 22, 1972, abandoned. This application Mar. 19, 1973, Ser. No. 342,461

Int. Cl. A61f *1/24*; **A61c** *13/00*

U.S. Cl. 3—1 **11 Claims**



A bone implant for vertebrates, including humans and animals in veterinary surgery such as hip prosthesis or a bone implant into the jaw in dental surgery, having a solid surface adapted to be in contact with the growing bone, said surfaces having at the outside at least a depth of 100 microns and preferably of ⅛ inch of 20 to 50%, preferably 30 to 40%, and most desirably about 33% of the pore area. The pores are divided between small, intermediate and large pores and the area of each is between 20 and 40% of the total pore area, preferably 30 to 36% and most desirably about 33%. The small pores range in size between 50 and 200 microns in diameter, preferably 75 to 100 microns and most desirably about 100 microns. The intermediate pores range in size from about 200 to 800 microns. The large pores range in size from above 800 to 3,500 microns.

3,808,607

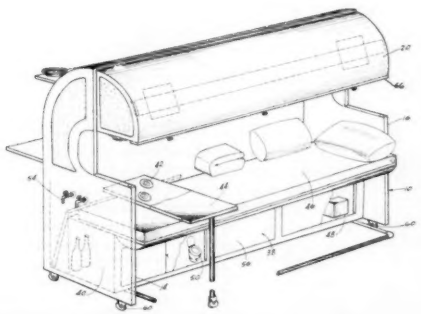
MULTIPLE PURPOSE APPARATUS

Arthur John Harder, 609 Pine St., New Lenox, Ill.

Filed Aug. 30, 1971, Ser. No. 176,007

Int. Cl. A47k *4/00*; **B61d** *31/00, 35/00, 27/00, 29/00*

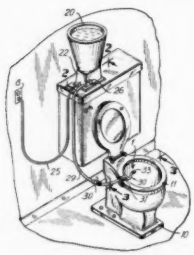
U.S. Cl. 4—2 **1 Claim**



An improvement in apparatus adapted to provide therein means for sustaining the elementary needs of man including

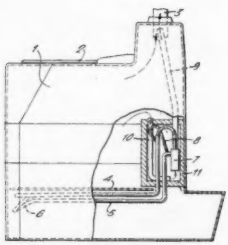
an overall housing. A plurality of variegated structural members are secured together to provide an integral unit. The unit may accommodate any number of structural arrangements that provide for the day to day living comfort of man. The unit may be located in a stationary location or may be moved from one location to another.

3,808,608
PORTABLE BIDET
David Caplan, 37 Banbury Rd., Rockville Center, N.Y.
Filed June 27, 1972, Ser. No. 266,710
Int. Cl. A47k *3/22, 11/08;* **A61h** *35/00*
U.S. Cl. 4—7 **10 Claims**



A portable nozzle is secured to the edge of a toilet bowl with a spring-clamp. Water is supplied to the nozzle from a self-contained, portable pump and reservoir device, powered by an electric motor. The portable bidet is made ready for use by filling the aforementioned reservoir with water at the preferred temperature, plugging the motor into any convenient electric outlet, clamping the nozzle to the toilet bowl and starting the pump by actuating the electrical on-off switch provided therewith.

3,808,609
BIOLOGICAL TOILET
Hans Andersson, Talldungen, 45080 Tanumshede, Sweden, and Hakon Eidet, Sannesundsveien 6, Sarpsborg, Norway
Filed Aug. 8, 1972, Ser. No. 278,864
Claims priority, application Sweden, Aug. 17, 1971, 10430/71; Norway, June 15, 1972, 2136/72
Int. Cl. A47k *11/02*
U.S. Cl. 4—133 **6 Claims**

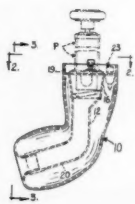


A biological toilet in which excrement and possibly garbage on a grid are brought to accelerated fermentation by supplemental heat and ventilation. The heat is supplied from a closed pipe loop containing a liquid heat transferring medium, which is circulated by a thermosiphon pump inserted in the loop and heated by a gas burner or an electric heating element.

3,808,610
SHOWER CURTAIN GUARD DEVICE
Don Mortensen, 305 S. Second St., Gallup, N. Mex.
Filed June 19, 1972, Ser. No. 263,971
Int. Cl. A47k *3/14;* **A47h** *1/18*
U.S. Cl. 4—149 **6 Claims**

A shower curtain guard for use particularly in connection with shower enclosures above conventional bath tubs, comprises a vertical bar or rail, attached by a double adhesive medium, to the wall at one or both ends of the tub. The rail is bent inwardly above the tub to hold the lower end of the curtain within the tub while affording a wider shower compartment above the tub. A spongy plastic seal prevents escape of water between the tub and the lower end of the bar or rail. Interlocking fibre patches on the curtain and on the rail which are separable secure the curtain so as to prevent water passing outside the compartment.

3,808,611
SEWER OPENING ADAPTER MEANS
August Neuman, 14283 Fordham, Detroit, Mich.
Continuation-in-part of Ser. No. 143,496, May 14, 1971. This application Jan. 24, 1972, Ser. No. 220,119
Int. Cl. E03c *1/304, 1/308*
U.S. Cl. 4—255 **2 Claims**



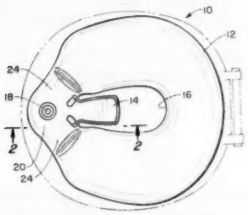
Sewer opening adapter means for use in unplugging sewer lines are disclosed having inner wall means in the form of rigid pipe means and outer wall means in the form of a rubber tube bonded at the top and bottom of said pipe means so as to form therewith an inflatable air bag covering said pipe means, said pipe means having first and second cavities formed therein inwardly of the upper end thereof, said second cavity formed inwardly of and being smaller in diameter than said first cavity, said second cavity being first-conical and inwardly converging so as to mate with and liquid seal against the lower end of a manually operable fluid pump, and air valve carried in said pipe means for inflating said air bag, and clamp means carried

in said pipe means for clamping said adapter means to said fluid pump, said air valve and said clamp means both disposed in said first cavity radially outwardly of said second cavity.

3,808,612
INFLATABLE TOILET SEAT

Robert G. Boyle, and Marian F. Boyle, 5296 Willow Wood Rd., both of Rolling Hills Estates, Calif.

Filed Mar. 9, 1972, Ser. No. 233,261
Int. Cl. A47k *13/06*
U.S. Cl. 4—239 **4 Claims**

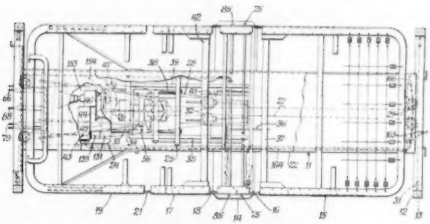


An integral plastic inflatable toilet seat to be placed upon the conventional fixed, hard seat of a toilet wherein the inflatable seat is foldable into a quite small volume when deflated, the inflatable seat is easily inflated and positionable upon the fixed, hard toilet seat, the inflatable seat includes an integral male deflector.

3,808,613
ELECTRIC HOSPITAL BED

John H. Carpentier, and Frederick A. Rose, both of Fort Atkinson, Wis., assignors to Joerns Furniture Company, Stevens Point, Wis.

Filed Jan. 26, 1973, Ser. No. 327,000
Int. Cl. A61g *7/00*
U.S. Cl. 5—63 **12 Claims**

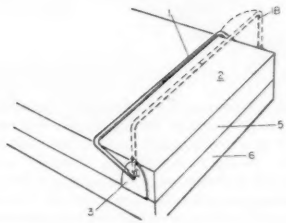


Economical electric hospital bed having drive screws for moving parts of an articulated mattress support relative to a supporting frame, motor means, transmission unit spaced from motor for actuating the drive mechanism, control unit spaced from transmission unit for determining desired operation thereof and effecting motor energization by actuating switches in motor circuit, and manually operable control members for selectively actuating control unit; supplementary insulation means to provide effective double insulation and minimize low level current leakage, comprising a switch bracket of high dielectric strength or nonconductive material for supporting the motor switches on the frame and electrically isolating them from the control unit, a single nonconductive coupling between the motor means and the transmission unit, nonconductive mounting brackets between the motor means and the bed frame, a nonconductive cone on motor shaft to enable manual crank operation in event of power failure, and a flexible fiber member interposed between thermal overload reset button on motor and small finger hole in motor shroud to permit manual resetting of button while preventing contact with inaccessible dead metal.

3,808,614
TOE PROTECTING BED CLOTHING RAIL

Florence Reinhard, 324 W. Main St., Crestline, Ohio

Filed Feb. 7, 1972, Ser. No. 179,138
Int. Cl. A47c *21/00*
U.S. Cl. 5—319 **3 Claims**

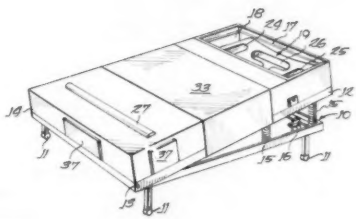


A support for easing the pressure of sheets and bed clothing on the feet of a sleeping person. A telescopic rod is pivotally connected at each end to a bracket which is positioned between mattress and springs.

3,808,615
BED AND PILLOW ASSEMBLY

William M. Geary, 9347 S. Crawford Ave., Evergreen Park, Ill.

Filed May 22, 1972, Ser. No. 255,427
Int. Cl. A47c *23/00*; **A61g** *7/04*
U.S. Cl. 5—338 **5 Claims**



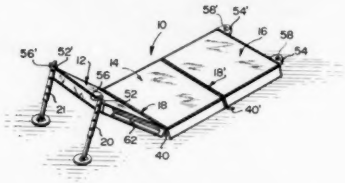
A conventional bed frame having a tiltable base, box spring and mattress with the box spring and mattress of less length than the frame and base to provide a space at the head end of the bed for the reception of a hollow padded receptacle and a pillow having spaced cut-outs or slots for reception of the face, nose, mouth and ears whichever is aligned with its slot and depending upon the reclined position of the occupant, such as the aligned ear over its slot when the occupant is lying on one side or the other of the face, the pillow being shiftable in its receptacle as the occupant moves to any one of the normal sleeping positions and especially on the stomach or either side. When the bed is occupied the body is covered by the folds of a relatively wide sheet material lying across the bed for shifting or turning the body and thereby effecting most comfortable sleeping positions.

3,808,616

FREE FORM CUSHION ASSEMBLY

Charles M. White, 19 Contentment Island Rd., Darien, Conn.

Filed Nov. 10, 1972, Ser. No. 305,473
Int. Cl. A47c 27/00
U.S. Cl. 5—344 R 5 Claims



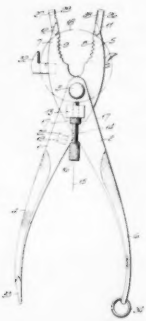
A free form cushion assembly adaptable for selective arrangement in plural operative configurations and especially suitable for use on a beach, patio, lawn or recreational area. The assembly includes articulated cushion segments detachably hinged together to provide pivotal independent movement for each segment. The segments can be vertically stacked for use as a hassock, arranged horizontally on a planar surface to form a bed, or alternately positioned in various other combinations to form a chair, lounge, hammock, etc. Additionally, brace members are incorporated for supporting one of the cushion segments in an inclined position for a back or head rest and the cushion segments can also be separated for independent use, such as for a pillow. In a variant embodiment, the cushion segments are fabricated with a floatation material to provide buoyancy for use in a pool, lake or on another body of water.

3,808,617

COMBINATION PLIER TOOL

George O. Lindsten, Stockholm, Maine, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed June 14, 1972, Ser. No. 262,777
Int. Cl. B25b 7/22
U.S. Cl. 7—6.2 5 Claims



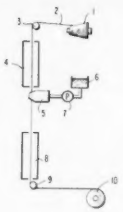
A jar lid opener for removing a lid from a jar is affixed to one of the arms of a plier tool in the area of the pivot pin and is affixed to the free end of the jaw portion of each arm. A bottle cap remover for removing a crimped bottle cap from a bottle is on one of the arms of the tool. Stove lid lifters for lifting a stove lid extend from the free end of the jaw portion of each arm. A can opener is affixed to one of the arms in the jaw portion thereof. A screw driver is provided at the free end of the handle portion of one of the arms of the tool.

3,808,618

METHOD FOR CONTINUOUS DYEING OF YARNS

Heiji Arimoto; Tokujo Goto; Kunio Amemiya, and Tunekatu Seki, all of Kyoto, Japan, assignors to Unitika Ltd., Amagasaki-shi, Japan

Filed June 14, 1972, Ser. No. 262,846
Claims priority, application Japan, June 14, 1971, 46-42316
Int. Cl. D06p 5/00; B05c 1/16
U.S. Cl. 8—149 10 Claims



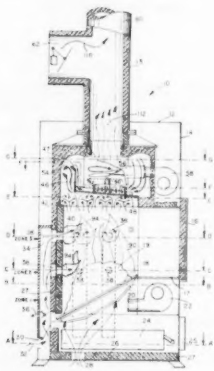
A method of continuously dyeing a yarn, which comprises, heating a running yarn to a temperature above the boiling point of a solvent in a dye and contacting said heated yarn with one or more dye applicators having a dye discharge aperture while discharging a dye through said aperture and onto said yarn is disclosed. An apparatus for continuously dyeing a yarn is also disclosed.

3,808,619

POLLUTION-FREE INCINERATION SYSTEM

Donald A. Vanderveer, 94 Radcliffe Ave., Port Washington, N.Y.

Filed Aug. 7, 1972, Ser. No. 278,632
Int. Cl. F23g 5/12
U.S. Cl. 110—8 C 31 Claims



An incinerator has a first combustion chamber which receives the waste to be incinerated. An ignition-burner is provided in the first chamber to ignite the waste; the burner automatically turns off at waste incineration temperature.

Burning of the refuse is accomplished in three zones, each zone being provided with proper temperature and a supply of regulated air at low velocity by means of natural aspiration, controlled by thermal feedback wherein the changing of the refuse fire changes the heat and vacuum applied to a conduit and orifice system of fire air injection resulting in automatic combustion control. A second combustion chamber is spaced above and communicates with the first chamber. Separators are provided in each chamber for separating partially burned

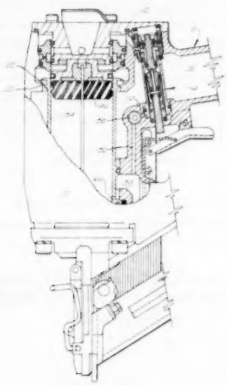
particles from the fully burned combustion gases and preventing the particles from rising beyond the respective separators. An after-burner is arranged to project a substantially horizontal flame into the second combustion chamber; the flame produced by the after-burner substantially filling the cylindrical second chamber and reducing any microscopic particles or unburned gases which have passed through the separators. The second chamber passes fully reduced combustion gas to the stack at a temperature of 2,000° Fahrenheit.

3,808,620

REMOTE VALVE FOR PNEUMATIC TOOL

Robert G. Rothfuss, Bellevue, Ky., and Lester D. Park, Cincinnati, Ohio, assignors to Senco Products, Inc., Cincinnati, Ohio

Filed Apr. 17, 1972, Ser. No. 244,404
Int. Cl. F01l *25/06*
U.S. Cl. 91—308 **12 Claims**



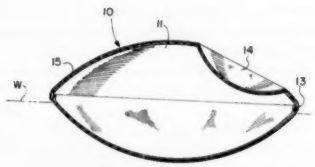
Structure for controlling the actuation of a fluid pressure operated main valve in a pneumatic tool, including a normally manually actuatable member which is effective upon movement to utilize fluid pressure to shift an oscillating stem. The stem, in turn, controls the fluid pressure acting upon the main valve. Thus, the opening and closing of the pressure operated main valve is dependent upon movement of the stem and independent of variations in speed of movement of the actuatable member.

3,808,621

SWIMMER'S VIEWING FLOAT

Park French, 59 S. Chillicothe Rd., Aurora, Ohio

Filed Nov. 24, 1972, Ser. No. 309,194
Int. Cl. B63b *35/72*
U.S. Cl. 9—310 H **13 Claims**



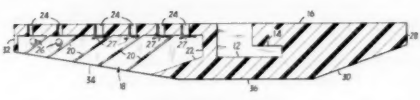
A swimmer's viewing float having generally spherical facing upper and lower parts, the latter being transparent and the former having a transparent concave viewing port. The concave shape of the viewing port prevents direct reflection of overhead light by the viewing port surfaces from entering the swimmer's field of view. The field of view is also shielded against reflection of overhead light by the lower part by making the upper part non light transmitting and/or an intermediate masking partition. The float can be rigid or wholly or partially collapsible and air inflatable.

3,808,622

SHOES FOR WALKING ON WATER

Neal R. Webster, 267 W. 71st St., New York, N.Y.

Filed Aug. 9, 1972, Ser. No. 279,191
Int. Cl. A63c *15/04*
U.S. Cl. 9—310 D **10 Claims**



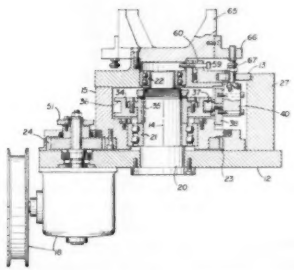
Shoes which enable a person to walk on the water are disclosed. The shoes comprise an elongated buoyant body member having a fixed volume propulsion chamber therein in combination with a passage whereby said chamber is in open communication with the atmosphere.

3,808,623

END WORKING MACHINE TOOL

Ronald J. Matej, Parma, Ohio, assignor to Prutton Corporation, Cleveland, Ohio

Filed Jan. 3, 1972, Ser. No. 214,763
Int. Cl. B23g *9/00*
U.S. Cl. 10—21 **18 Claims**



A bolt blank chamfering machine tool is disclosed which rotates a blank workpiece held in a space between an arcuate shoe and a pair of rollers on a table. As the table revolves, the workpiece moves in a form of planetary motion and rotates. A slide carrying a tool moves to cut or otherwise shape the end of the workpiece blank by means of a cam follower acting on a stationary cam. This provides chamfering, pointing or otherwise shaping the end of the workpiece. The above description is merely one form of the invention and is not to be construed as limiting on the scope of the invention.

3,808,624

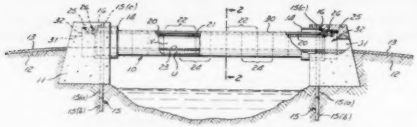
BRIDGE CONSTRUCTION

Howard L. Barkdull, Jr., 15117 Edgewater Dr., Lakewood, Ohio

Filed July 15, 1971, Ser. No. 162,783
Int. Cl. E01d *1/00*
U.S. Cl. 14—1 **7 Claims**

Viaduct construction comprised of a set of taut lengthwise cables surrounding and supporting tubular sections having in-

ternal roadway surface for vehicles. Sections, cradled in cables, stiffen the set of cables against catenary sag. Assembled



sections and surrounding set of cables wrapped with high tensile strength sheeting further stiffening the assembly. Assembly received in tubular anchors supported in abutments.

3,808,625

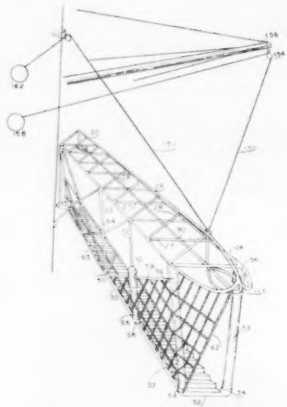
DEVICE FOR TRANSFERRING PERSONNEL TO AND FROM A VESSEL

Walter E. Fowler, Rio Rd., Rt. 8, Charlottesville, Va.

Filed Aug. 10, 1972, Ser. No. 279,321

Int. Cl. B65g *1/00*

U.S. Cl. 14—71 **20 Claims**



A gangway to enable personnel to be transferred to and from a platform or vessel in turbulent water. The gangway is constructed of pliant or inflatable, elastomeric, plastic or other flexible material supported by a rope network from a rigid overhead framework. An overhead rail is supported by said framework and runs longitudinally of the gangway. Trolleys are mounted on the rail and are provided with means to grasp the trolleys by hand and to hook safety belts thereto to support personnel ascending or descending the gangway. One end of the gangway is pivoted to a platform or vessel and the free end is supported by two lines operated by two winches. One of these lines is led through a block on the side of the vessel or platform, and the other line is led through a block on a boom projecting from the vessel or platform so that the gangway can be raised or lowered as well as swung horizontally.

3,808,626

SELF-CONTAINED MOBILE PASSENGER BRIDGE FOR AIPLANE LOADING AND UNLOADING OPERATIONS

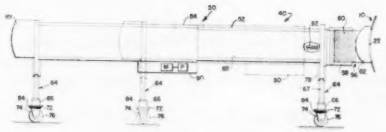
John Willett Magill, 643 S. Oak Knoll Ave., Pasadena, Calif.

Continuation of Ser. No. 70,148, Sept. 8, 1970, abandoned. This application Aug. 28, 1972, Ser. No. 284,229

Int. Cl. B65g *1/00*

U.S. Cl. 14—71 **2 Claims**

A mobile passenger bridge which is of tunnel-like design, is extensible and contractible and open at both ends, has steerable wheels adjacent to its opposite ends, and is supported on its wheels by way of vertically adjustable supporting assemblies so that the ends thereof may be individually and adjustably raised and lowered. The bridge is motorized so that it may be driven over the ground and the ends thereof individually and selectively steered from a storage location to a position wherein one open end thereof may be operatively connected to the distal end of a swing-type loading ramp lead-



ing from a depot building doorway and the other open end connected to one of the doorways in the fuselage of an aircraft. Hydraulic equipment and manually operable controls therefor are provided so that the bridge may be maneuvered into an approximate position and then adjusted for proper height, inclination and length so that an approximately in-line passageway between the loading ramp and the airplane is provided.

3,808,627

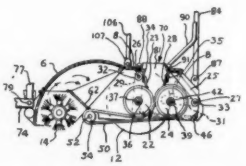
BAG CARRYING STRUCTURE

Charles W. Doering, Clarksville, Ind., and Samuel W. Smith, Carlisle, Ky., assignors to Brinly-Hardy Co., Inc., Louisville, Ky.

Division of Ser. No. 195,607, Nov. 4, 1971, abandoned. This application Nov. 7, 1972, Ser. No. 304,378

Int. Cl. A01g *1/12*

U.S. Cl. 15—83 **10 Claims**



Lawn and parking lot sweepers of the rotary brush type in which sweepings are discharged into bags are known. However, in such sweepers the debris generally is not compressed sufficiently prior to entering the bag. As a result bags must be changed too frequently. The apparatus herein is provided with compression rollers, and means for force filling the bag. Conveying means transport debris from the cylindrical brush to the compression rollers.

3,808,628

FLOOR MAT

Kenneth H. Betts, Mississauga, Ontario, Canada, assignor to Construction Specialties, Inc., Cranford, N.J.

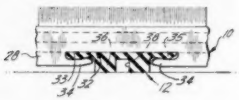
Filed June 15, 1972, Ser. No. 263,126

Int. Cl. A47l *23/24*

U.S. Cl. 15—215 **20 Claims**

A floor mat comprises a multiplicity of substantially rigid elongated rails joined together in closely spaced parallel relation by spaced apart flexible strips that extend transversely across the rails. Each rail has at least two matching slots spaced longitudinally from each other. Each slot is open at the free edge of the rib remote from the base and has an undercut portion spaced from the free edge to leave a projection at the opening of the slot. The connector strips are shaped in cross-

section generally to match the shapes of the slots in the rib and extend through the slots. The projections are staked toward



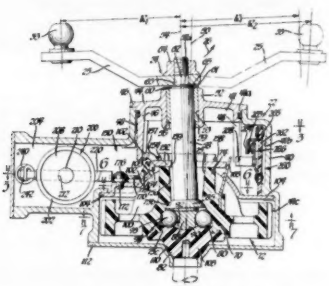
the rail bases to engage and secure the connector strips to the rails.

3,808,629

ACTUATING MECHANISM FOR A DEPRESSED PARK WINDSHIELD WIPER SYSTEM

Frederick Druseikis, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 29, 1972, Ser. No. 310,384
Int. Cl. B60s *1/24*
U.S. Cl. 15—250.17 **2 Claims**



In a preferred form, this disclosure relates to an actuating mechanism for use in oscillating a pair of windshield wipers across a windshield between inboard and outboard positions during running operation and to move the wipers to a depressed park position spaced from the inboard position when wiper operation is being terminated. The actuating mechanism includes a rotatable crank assembly having a crank shaft and a crank arm connected thereto. The crank arm is rotated about the rotational axis of the crank shaft through an orbit having a first radius during running operation of the wipers to move the same between their inboard and outboard positions and the crank assembly is both rotated and swivelled about its rotational axis to increase the throw of the crank arm of the crank assembly to effect movement of the wipers to a depressed part position when wiper operation is being terminated.

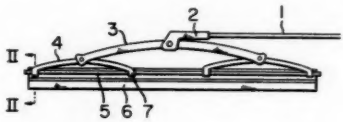
3,808,630

WINDSHIELD WIPER FOR VEHICLES

Isao Ito, 119 Kamezakitakanecho-8-chome, Handa-shi, Japan

Filed Sept. 26, 1972, Ser. No. 292,275
Claims priority, application Japan, Oct. 4, 1971, 46-91090
Int. Cl. B60s *1/04*, *1/40*
U.S. Cl. 15—250.42 **1 Claim**

A windshield wiper for vehicles is provided in which a spring member elastically carrying a squeegee is longitudinally slidably retained by a pair of pawl or retaining members made of a synthetic resin and securely fixed to both ends of a second connecting or retaining member which in turn is pivoted to a first connecting member pivoted to a clip member fixed to an oscillating wiper arm. In operation no noise is produced because the second connecting members and the spring members which are made of a metal are separated from each other by the pair of synthetic resin pawl or retaining members, and in production the saving of the blank material from which a



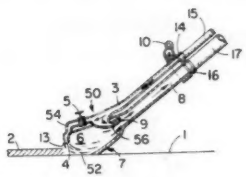
second connecting member is drawn may be realized because a flat blank having a uniform width may be used.

3,808,631

DEVICE FOR REMOVING A SLUDGE FROM A SURFACE

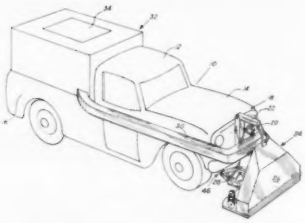
Katsuhiko Shibata; Yajuro Seika, both of Nishisonogi-gun; Iwao Sakamoto, Nagasaki; Kango Yamada, Nagasaki, and Setsuo Kondo, Nagasaki, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 876,371, Nov. 13, 1969, abandoned.
This application Mar. 1, 1972, Ser. No. 230,948
Int. Cl. A47l *7/00*
U.S. Cl. 15—321 **3 Claims**



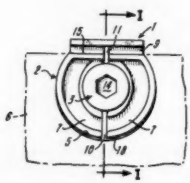
A device for removing a sludge from the surface of a liquid or from a floor such as a deck of a tanker includes a shovel which is adapted to be moved along the sludge with its opened mouth positioned to receive the sludge. The construction includes a connection for directing a high velocity liquid jet into the shovel in the vicinity of the mouth to impinge upon the sludge and to break it up into a slurry and, in addition, means are provided for withdrawing the slurry upwardly through a conduit for discharge at a remote location. The discharging connection advantageously includes a liquid ejector which is operated partly by the conduit connected for supplying the high velocity jet of liquid to the shovel and which is connected to the shovel for providing a withdrawing suction or pumping action on the slurry which is formed in the shovel. In a further embodiment, the interior of the shovel is provided with a screen or grate across the shovel interior onto which the slurry is directed and against which the high velocity liquid jet is directed. The action breaks up the slurry elements into finer elements for withdrawal through the discharge conduit. A still further embodiment includes an intermediate chamber at the rear of the shovel which is adapted to receive the slurry after it is first acted upon by the high velocity jet and which includes a plurality of turning water streams which are directed in a whirling flow to cause a rotation and further pulverizing of the slurry material before it is delivered through the discharge conduit.

3,808,632
VEHICLE MOUNTABLE AREA CLEANER
Elvin A. Aagesen, 2491 W. Evans, Denver, Colo.
Filed Dec. 13, 1971, Ser. No. 207,094
Int. Cl. A47l 5/00
U.S. Cl. 15—340 10 Claims



An area cleaner, mountable on the front of a wheeled vehicle, includes a rotary brush sweeper and a blower arranged to pick up dirt and trash by suction, both units being driven from the vehicle engine drive shaft. Picked up trash and dirt is pneumatically conveyed to a container mounted on the vehicle.

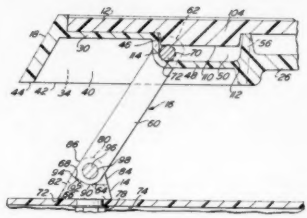
3,808,633
FURNITURE FITTING, SPECIFICALLY FOR DETACHABLE SUSPENSION OF A SLIDING DOOR FROM A GUIDE RAIL
Heinrich Lauterbach, Nurnberg, Germany, assignor to Trola-Kunststoffer-Zeugnisse GmbH & Co., Nurnberg, Germany
Filed Mar. 2, 1972, Ser. No. 231,247
Claims priority, application Germany, Mar. 4, 1971, 2110360
Int. Cl. E05d 13/02
U.S. Cl. 16—87 R 20 Claims



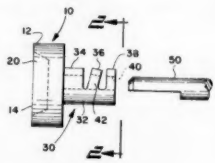
A fitting, especially for detachably suspending a sliding door from a guide rail, which comprises a hanger guided in a guide rail and a holder sunk into a recess at the top end of the sliding door and connectable to the sliding door so that the weight of the sliding door is carried by the guide rail through the intervention of the holder and the hanger, the holder comprising two jaws connected to the hanger and also comprising means, e.g., an eccentric cam, for spreading the jaws radially apart so that contact pressure will secure the holder in the above mentioned recess positively to the sliding door.

3,808,634
COLLAPSIBLE SELF-RETURNING HANDLE WITH HIDEAWAY LINKAGE
Marton J. Szabo, Camden, N.J., assignor to Philadelphia Handle Company, Inc., Camden, N.J.
Filed July 26, 1973, Ser. No. 383,011
Int. Cl. A47b 95/02
U.S. Cl. 16—115 13 Claims

A collapsible self-returning handle for carrying cases, portable television and radios, electronic test equipment and the like in which the elongated handgrip is operatively connected to the wall of the carrying case by links equipped with rolling pins so that the raising and lowering action is smooth and relatively noiseless, and in the collapsed position in with the lower edges of the handgrip are against or adjacent the attaching wall, the attaching brackets and links are received in hideaway recesses.

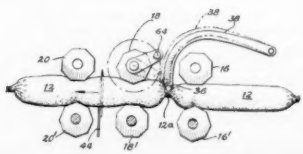


3,808,635
SELF RETAINING KNOB
Thomas M. Moran, Cleveland, and Joseph H. Paskert, Lakewood, both of Ohio, assignors to Eaton Corporation, Cleveland, Ohio
Filed June 2, 1972, Ser. No. 258,965
Int. Cl. A47b 95/02
U.S. Cl. 16—121 17 Claims



A one-piece all plastic knob adapted for self retention on a standard shaft. The knob includes a guideway substantially conforming to the shaft for receiving the shaft in proper axial relation to the knob. A resilient member having an aperture through which the shaft must pass upon insertion into the guideway is provided in a position where the aperture is partially offset from the guideway. Upon insertion of the shaft through the guideway and aperture, the resilient member is resiliently deformed and resiliently engages the shaft. The undeformed position of the resilient member may be varied in accordance with the required degree of shaft retention.

3,808,636
LINK CUTTING MACHINE
Alfred J. Gouba, 339 Atlantic Ave., Sloan, N.Y.
Filed May 25, 1972, Ser. No. 256,960
Int. Cl. A22c 11/00
U.S. Cl. 17—1 F 7 Claims



A machine for severing joining areas of a chain of articles, such as sausages or weiners, as the chain is fed by a conveyor

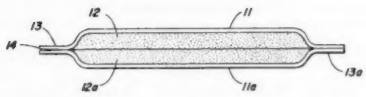
along a given course. A sensing device is provided for the purpose of sensing the presence of a joining area and releasing a follower finger for movement into engagement with the chain in the area of the sensed joining area. The engaged follower finger, which is forced to travel at a speed determined by that of the sensed joining area, serves to operate a joining area severing device, as a sensed joining area is presented thereto.

3,808,637

DEPILATION DEVICE

Herbert Lapidus, Edison, N.J., assignor to Combe Incorporated, White Plains, N.Y.

Filed July 14, 1972, Ser. No. 272,051
Int. Cl. A22b
U.S. Cl. 17—1 D **8 Claims**



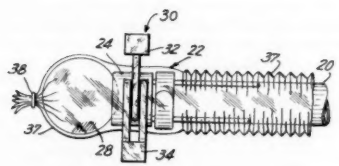
A device for removing hair from animal skin, which device may take the form of a laminate of flexible sheet material, at least a part of which has been impregnated with a tacky substance. The device is pressed against the skin so that the impregnated part is in contact therewith, and is then removed therefrom by a quick movement, the device carrying with it the undesirable hair on the skin and maintaining that area of the skin substantially free from hair.

3,808,638

METHOD AND APPARATUS FOR PRODUCING A LARGE SAUSAGE PRODUCT HAVING A PRE-FLATTENED END

Vytautas Kupcikevicius, Chicago, and Michael Joseph Myles, Downers Grove, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 28, 1971, Ser. No. 212,914
Int. Cl. A22c *11/00*
U.S. Cl. 17—35 **6 Claims**



A method and apparatus are provided for positioning a flat circular disc in a large sausage casing so that after the food casing has been stuffed with a food emulsion and the thusly stuffed food emulsion has been cooked and cured, there if obtained a large sausage product having a pre-flattened end.

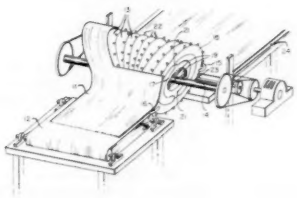
3,808,639

APPARATUS FOR ALTERING THE WIDTH, WEIGHT AND THICKNESS OF FABRIC WEBS

Bonaventura Tautvaisas, Quincy, Mass., assignor to The Kendall Company, Walpole, Mass.

Filed Jan. 15, 1973, Ser. No. 323,596
Int. Cl. D04h *11/00*
U.S. Cl. 19—161 R **6 Claims**

A plurality of disks, mounted on a rotatable shaft, each having a plurality of spaced apart flexible protuberances extending radially out from the perimeter thereof. Each disk is composed of two concentric rings — the innermost ring being attached to the rotatable shaft by means of two swivel pins that are mounted on the shaft directly opposite each other, thereby facilitating the free arcuate movement in a horizontal plane of the ring about the shaft, while the outermost ring is mounted on two swivel points that are positioned on the perimeter of the inner ring at 90° from the swivel pins, thereby facilitating the free, arcuate movement in a vertical plane of the inner ring about the shaft and producing a gyroscopic movement of the disk about the shaft. Guiding means are provided to orient the



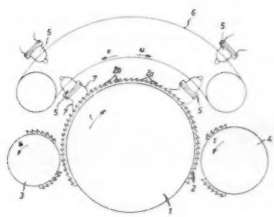
disks in a diverging or converging manner as desired, via the swivel pins and swivel points. A web of fabric, moving into the disks on the converging side thereof, is then engaged by the flexible protuberances and drawn along divergent lines so as to increase the width of the web while decreasing the thickness thereof. The thickness, uniformity, weight and the width of the web can be accurately controlled by simply varying the angle of divergence of the individual disks.

3,808,640

CARD CLOTHING ARRANGEMENT

Werner Franz Graf, Rapperswil, Switzerland, assignor to Graf & Cie AG, Rapperswil, Switzerland

Filed May 28, 1971, Ser. No. 147,740
Claims priority, application Switzerland, June 3, 1970, 8323/70
Int. Cl. D01g *15/24*
U.S. Cl. 19—113 **8 Claims**

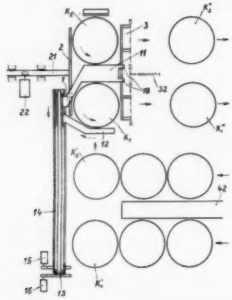


A card clothing arrangement, especially the flat clothing of a revolving flat card incorporating a number of flats arranged in succession. Each of the flats is provided with hooklike clothing elements which are inserted in the base of the support element or elements and each of such hook-like clothing elements possesses an inner section located at the base region and an outer section. The inner base section is inclined at an angle, the so-called penetration angle, and the outer section is inclined at an angle, the so-called comb angle, with respect to a vertical of the base plane. The invention contemplates providing a multiplicity of groups of such hook-like elements, wherein the comb angle within a group of such hook-like elements always varies in the same direction of the feed or transport of the material.

3,808,641
CAN CHANGING DEVICES

Gottfried Schneider, and Friedrich Hauner, Ingolstadt, both of Germany, assignors to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany

Continuation of Ser. No. 33,724, May 1, 1970, abandoned.
This application Apr. 17, 1972, Ser. No. 244,974
Int. Cl. B65h *54/80*
U.S. Cl. 19—159 A **7 Claims**

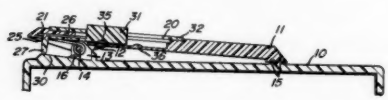


In a sliver can changing device adapted for use with sliver processing machinery passing sliver along a given direction to at least two sliver cans in a filling position simultaneously, means for moving at least two cans out of a reserve position into the filling position and then out of the filling position into an ejection position, the movement of the empty cans into the machine being perpendicular to the direction of sliver travel in the machine and the cans after being filled being ejected in the same direction as the direction of the sliver travel in the machine, drive means and at least one support part for holding the cans in the filling position and centering them for concentric rotation in the filling position.

3,808,642
LOCKING CLIP FOR FASTENING AN ARTICLE TO A BELT OR THE LIKE

Melvin S. Nation, Pompano Beach, Fla., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 22, 1972, Ser. No. 317,577
Int. Cl. A44b *21/00*
U.S. Cl. 24—3 F **4 Claims**



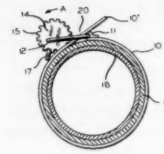
An elongated clip pivotally mounted to a housing with an L-shaped locking member having one arm slidably mounted on the clip for axial movement with the other arm projecting inwardly toward the housing and movable between a first position adjacent the pivotal axis of the clip to allow pivotal movement and a second position spaced from the pivotal axis to prevent pivotal movement of the clip.

3,808,643
ADJUSTABLE CLAMPS

Edwin Gouge, 1021 Milwaukee Ave., South Milwaukee, Wis.

Filed May 30, 1972, Ser. No. 257,821
Int. Cl. B65d *63/00*
U.S. Cl. 24—19 **3 Claims**

A cable or hose clamp arrangement comprises an eccentric gear with a flexible tongue or strap having a rack of teeth or slots thereon. The strap is wrapped around a cable, hose or similar member, and the tongue is slipped under the gear and pulled tightly while the eccentric gear is in a position which

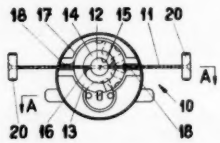


does not engage the tongue. A pin on the gear rotates the gear so that its tooth engages the rack and holds it tightly to prevent unintended counter rotation.

3,808,644
CLOSURE DEVICE FOR SHOES, PARTICULARLY FOR SKI SHOES

Robert Schoch, Singen/Hohentwiel, Germany, assignor to Weinmann Aktiengesellschaft, Schaffhausen, Switzerland

Filed Mar. 13, 1973, Ser. No. 340,899
Claims priority, application Germany, Mar. 21, 1972, 2213720
Int. Cl. A43c *11/00*
U.S. Cl. 24—68 SK **6 Claims**

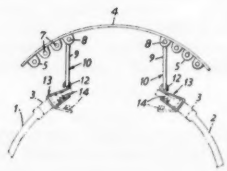


A closure device for a shoe has a housing, a Geneva mechanism with a Geneva wheel journalled for rotation relative to the housing, a pulley coaxially secured to the Geneva wheel, and a pair of tie cables each having one end secured on the pulley and the other end on the housing, thereby forming a pair of tie loops engaged to the shoe upper and operable for being wound on the pulley by rotating the Geneva wheel for releasably tying the shoe upper.

3,808,645
FASTENING DEVICE

Yut Chow, 15 Warren St., Rm. 22, Hackensack, N.J.

Filed Sept. 11, 1972, Ser. No. 288,024
Int. Cl. A43c *11/00*; **A44b** *21/00*
U.S. Cl. 24—71 SK **1 Claim**



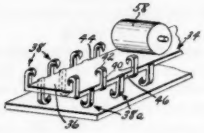
The invention provides a fastening device, for the "uppers" of articles of footwear, having an elongated bridge member, a pair of cranks journalled on the bridge member at respective points along its length for pivotal movement in the direction of elongation of the bridge member, and means rotatably mounted on each crank at a spacing from its journal for coupling the crank to a respective one of two portions of the upper.

3,808,646

MULTI-ELEMENT SELF-GRIPPING CHANNEL

George C. Brumlik, 154 Upper Mountain Ave., Montclair, N.J.

Filed Mar. 18, 1971, Ser. No. 125,591
Int. Cl. A44b 9/00; F16b 15/06
U.S. Cl. 24—87 R 10 Claims



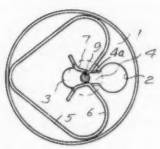
A multi-element self-gripping device is made in channel form with parallel rows of gripping members extending longitudinally along the edges of an elongated web or strip, and projecting perpendicularly from one face or both faces of the strip. The gripping members are formed with sharp hooks or barbs and provide a pair of parallel lines for penetration of an opposing surface.

3,808,647

DEVICE FOR RETAINING BUTTONS

Carlos Ricci Febrer, Calle Menendez Pelayo, 141, Barcelona, Spain

Filed May 12, 1972, Ser. No. 252,839
Claims priority, application Spain, May 17, 1971, 169290; Nov. 25, 1971, 174940
Int. Cl. A44b 1/32
U.S. Cl. 24—108 2 Claims



A button is retained on a garment or the like by a pin having an enlarged head on the button being pushed into a retaining device. The retaining device is a hollow body with two orifices connected by a narrow neck, the pin head being smaller than one orifice so as to pass through it but larger than the other orifice so that by pushing the pin sideways through the neck into the second orifice, the button is retained there by engagement of the large head behind the smaller orifice. Resilience of the neck is provided by inturned flanges and by a spring so as to resist accidental removal of the button from the device.

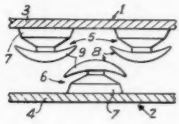
3,808,648

SEPARABLE FASTENING SHEET

Patrick Billarant, Nantes; Robert Goubeau, Bois Le Roi, and Jacques Langlois, Paris, all of France, assignors to Velcro France, Paris, France

Filed Dec. 1, 1971, Ser. No. 203,754
Claims priority, application France, Dec. 4, 1970, 70.43663
Int. Cl. A44b 17/00
U.S. Cl. 24—204 6 Claims

In a separable fastening sheet having clasping elements which are designed to co-operate with corresponding clasping elements of another sheet and at least some of which have at their end an enlarged or bulbous terminal head connected to the base by a stem, web or foot, the heads of at least part of these elements having a widened head have at least one flexible lip or edge adapted to bend with respect to the remainder of the element for penetration of said heads between or into the corresponding elements of the other sheet and the locking thereof by the last-mentioned elements by elastic retraction of said lip on contact thereof with said corresponding elements and its at least partial return to its position of rest.

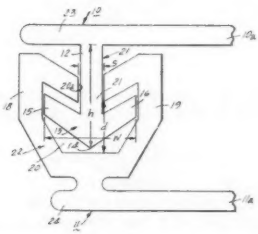


3,808,649

PERMANENTLY CLOSABLE FASTENER

Steven Ausnit, 124 E. 61st St., New York, N.Y.

Filed July 26, 1971, Ser. No. 166,198
Int. Cl. A44b 17/00, 19/00
U.S. Cl. 24—201 C 9 Claims



A flexible fastener for joining plastic sheets such as in closing the tops of bags wherein the fastener strips remain permanently closed once they are joined. The strips include a first strip formed of a plastic material having a web portion with a rib element extending continuously therealong having a neck portion and an enlarged head with a second fastener strip formed of a plastic material with a web portion having a groove element extending therealong formed of a pair of spaced jaws with a head retaining groove therein shaped to correspond to the shape of the head and with an entrance slot leading to the groove with the head and jaws being such that they will not interlock when pressed together but can be interlocked only by an external joining tool which forcibly spreads the jaws apart, places the rib element in position and allows the jaws to close around said rib so that once interlocked, they cannot be separated by pulling apart on the webs.

3,808,650

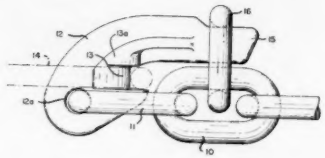
CABLE LOCKING HOOKS

Harold A. Guthans, Mobile, Ala., assignor to Guthans Engineering Co., Mobile, Ala.

Filed Oct. 12, 1971, Ser. No. 188,094
Int. Cl. A43c 11/08; A44b 13/00
U.S. Cl. 24—230.5 3 Claims

A safety cable hook is provided for receiving a cable loop which hook includes a rigid loop, a hook means rotatable on the loop and having a throat with a substantial radius in the

plane of the loop exceeding the minimum bending radius of the cable, and a free end on said hook extending parallel to the

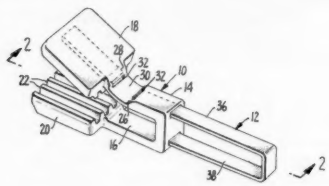


rigid loop receiving a lock ring slidable in said rigid loop to prevent removal of said cable.

3,808,651
CLASP

Charles Almendarez, P.O. Box 1892, Vallejo, Calif.

Filed Nov. 21, 1972, Ser. No. 308,429
Int. Cl. A44b *21/00*
U.S. Cl. 24—260 **1 Claim**

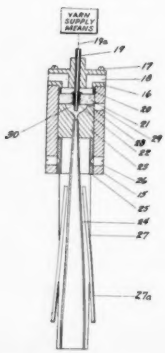


A clasp having a pair of jaws and a jaw-actuating member slidably related to both jaws to effect closing and opening of the jaws.

3,808,652
TREATMENT OF YARNS

David Robert Elliott, and John Michael Greenway, 64 Hookstone Rd., both of Harrogate, Yorkshire, England

Division of Ser. No. 889,518, Dec. 31, 1969, Pat. No. 3,644,968. This application Nov. 23, 1971, Ser. No. 201,424
Claims priority, application Great Britain, Dec. 31, 1968, 61962/68
Int. Cl. D02g *1/16*
U.S. Cl. 28—1.4 **5 Claims**

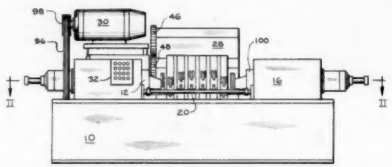


Apparatus for relaxing a running yarn composed of thermoplastic polymer material comprising a yarn supply means, a fluid tension device having a yarn passageway, means for introducing a gaseous fluid under pressure to the fluid tensioning device and a heating zone comprising an externally heated divergent passageway of a cross section steadily increasing from that of the yarn passageway.

3,808,653
DIVIDED DRIVE SINGLE SPINDLE CRANKSHAFT MACHINE

Joseph A. Oeming; Allan J. Heffrom, both of Saginaw, and Arthur L. Estry, Jackson, all of Mich., assignors to C. M. Systems, Incorporated, Saginaw and Crankshaft Machine Company, Jackson, both of, Mich., part interest to each

Continuation-in-part of Ser. No. 170,100, Aug. 9, 1971, Pat. No. 3,757,615. This application Sept. 6, 1973, Ser. No. 394,747
Int. Cl. B23b *5/18, 21/00*; B23h *19/02*
U.S. Cl. 82—9 **9 Claims**



A machine for machining the crankshaft pin bearing surfaces of a crankshaft, such as used in internal combustion engines, wherein rotatable headstock and tailstock spindles support and rotate the crankshaft during machining and tool positioning is accomplished through a master crankshaft rotated in unison with the spindles. To overcome inaccuracies resulting from gear play and cutting tool reaction forces, a portion of the torque driving the headstock and tailstock spindles is transmitted through the master crankshaft, however, the torque transmitted through the master crankshaft is limited to that necessary to overcome adverse reaction cutting forces, and the remainder of the driving torque required during machining is transmitted through a gear train directly interconnecting the headstock and tailstock spindles. Two gear trains driven from a common motor are employed to drive the crankshaft machine spindles, and torque divider means determines the amount of torque transmitted by the respective gear trains.

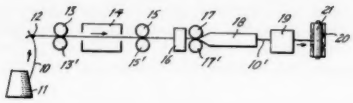
3,808,654
TEXTILE TREATMENT METHOD

Robert Kenneth Stanley, 620 Meadowvale Ln., Media, Pa.

Continuation of Ser. No. 846,457, July 31, 1969, which is a continuation-in-part of Ser. Nos. 684,230, Nov. 20, 1967, Pat. No. 3,462,815, and Ser. No. 678,428, Oct. 26, 1967, Pat. No. 3,462,814, and Ser. No. 606,420, Dec. 30, 1966, and Ser. No. 835,883, June 9, 1969, said Ser. No. 684,230, and Ser. No. 678,428, each is a continuation-in-part of Ser. No. 302,758, July 31, 1963, Pat. No. 3,376,622, which is a continuation-in-part of Ser. No. 790,658, Feb. 2, 1957, Pat. No. 3,111,740, and Ser. No. 216,524, Aug. 13, 1962, abandoned, said Ser. No. 606,420, Continuation-in-part of Ser. No. 386,489, is a continuation-in-part of Ser. No. 216,447, Aug. 13, 1962, Pat. No. 3,145,947, said Ser. No. 835,883, Continuation-in-part of Ser. No. 650,762, is a continuation-in-part of Ser. No. 349,338, March 4, 1964, Pat. No. 3,348,283. This application Jan. 3, 1972, Ser. No. 214,893. The portion of the term of this patent subsequent to Jan. 4, 1991, has been disclaimed.
Int. Cl. D02g *1/12*
U.S. Cl. 28—72.14 **20 Claims**

Textile yarns or strands are heated, as by contact with hot

rolls, and then are crimped, preferably compressively as in a



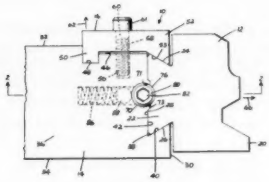
stuffer crimper, after being drawn to increased length if so drawable.

3,808,655

TOOL HOLDER ASSEMBLY

Robert L. Foster, Walton, Ind., assignor to Meredith W. Slusher, Walton, Ind., a part interest

Filed Mar. 28, 1972, Ser. No. 238,841
Int. Cl. B26d *1/02*
U.S. Cl. 29—96 **8 Claims**



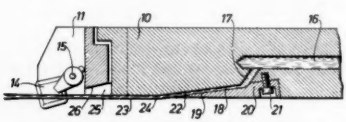
In a tool holder assembly, the combination comprising a forming tool and a support member having complementary interlocking surfaces and clamping means for maintaining the tool and the member in interlocking relationship. The clamping means is operable between a first position in which it positively locks the tool to the support and a second position in which it permits relative sliding movement and limited separation therebetween. A first elongated recess is provided in the support member and a cylindrical threaded element is rotatably received therein. A second recess is formed in the tool in registry with the first recess, the second recess having a threaded wall which is operatively engaged with the threaded element when the clamping means is between its first and second positions and which is slidably engaged therewith when the clamping means is in its second position.

3,808,656

ADJUSTABLE CUTTING TOOL

Bo Gosta Lindskog, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden

Filed Apr. 2, 1973, Ser. No. 346,819
Claims priority, application Sweden, Apr. 10, 1972, 4584/72
Int. Cl. B23p *15/30*
U.S. Cl. 29—106 **6 Claims**



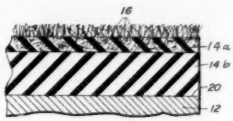
The invention concerns an adjustable cutting tool having cooling or flushing medium supply directed to the cutting insert.

3,808,657

HICKEY ROLL AND METHOD OF MAKING SAME

Louis J. Menges, Barrington, and Robert H. Wolff, Chicago, both of Ill., assignors to Marathon Rollers Incorporated, Chicago, Ill.

Filed Jan. 26, 1972, Ser. No. 220,972
Int. Cl. B21b *31/08*
U.S. Cl. 29—120 **1 Claim**



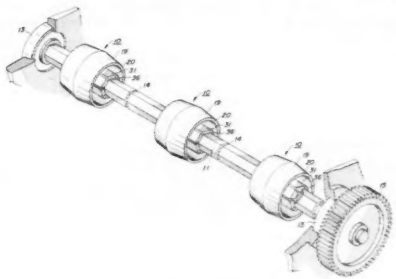
A cylindrical core having a covering of rubber impregnated with nylon fibers the rubber of which is vulcanized after securing it to the core and then said covering is ground leaving a substantial number of fiber ends protruding from the peripheral surface of the rubber.

3,808,658

SNAP ROLLER

John H. Looney, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 20, 1973, Ser. No. 353,030
Int. Cl. B21b *31/08*
U.S. Cl. 29—110 **15 Claims**



A conveyor roller and support assembly for conveying and guiding a belt or the like along a predetermined path of travel. Means are provided by which a roller can be conveniently relocated or removed from the system which includes a pluraltty of fingers extending from the body of the roller terminating in an inwardly turn lip capable of being seated within any one of a number of complementary grooves formed in the roller support member.

3,808,659

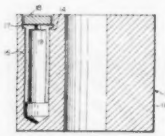
BONDED BRONZE-IRON LINERS FOR STEEL CYLINDER BARREL AND METHOD OF MAKING SAME

Martin J. Alger, Jr., and Nelson H. Dunn, both of Watertown, N.Y., assignors to General Signal Corporation, Rochester, N.Y.

Division of Ser. No. 93,298, Nov. 27, 1970, Pat. No. 3,709,108. This application July 27, 1972, Ser. No. 275,731
Int. Cl. B23p *15/00*; **B22f** *3/26*
U.S. Cl. 29—156.4 WL **9 Claims**

The disclosure concerns cylinder barrels for piston pumps and motors which have lined cylinder bores. Each liner comprises a matrix of sintered, powdered iron which is impregnated with bronze, and which is metallurgically and mechanically bonded to the steel barrel. The liners are formed

from porous, sintered iron sleeves which are placed in the bores in contact with bronze slugs. The assembly is heated in a non-oxidizing atmosphere to a temperature between 1,900°F and 2,000°F to melt the bronze and cause it to infiltrate the



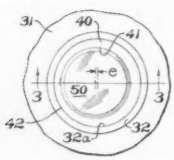
sintered preform and bond to the steel. Thereafter, the assembly is cooled in the non-oxidizing atmosphere to solidify the bronze, followed by air cooling to room temperature. Finally, the finished cylinder bores are machined in the bonded bronze-iron sleeves.

3,808,660

METHOD FOR CORRECTING ROTATIONAL NON-UNIFORMITY OF A PNEUMATIC TIRE AND WHEEL ASSEMBLY

Thomas R. Wik, Middleburg Heights, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Sept. 1, 1972, Ser. No. 285,576
Int. Cl. B21d *53/26*; **B21k** *1/28, 1/42*
U.S. Cl. 29—159 R **8 Claims**



A method to reduce rotational non-uniformity of a pneumatic tire and wheel assembly, produced by radial force variation, comprising determining the first harmonic of the variation in radial force of the assembly while rotating about its axis, providing the wheel with a central opening eccentric with respect to the said axis of rotation, the amount of the eccentricity of the opening and its orientation being selected and disposed so as to counteract and oppose the first harmonic of the variation in radial force of the assembly, and employing the axis of said opening as the axis for rotation of the assembly when in use.

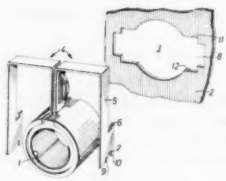
3,808,661

DEVICE FOR FASTENING A BEARING IN A CONSTRUCTION MADE OF PLATE OR STRUCTURAL STEEL

Mats Carlsson, Helgevarma, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden

Filed Feb. 16, 1973, Ser. No. 333,174
Claims priority, application Sweden, Mar. 1, 1972, 2625/72
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 P **2 Claims**

A cage for mounting a bearing in a plate, said cage having a cylindrical portion which snugly receives the bearing, preferably a plain bearing. The cylindrical portion of the cage is formed out of sheet material and has resilient mounting legs which are substantially planar and which are disposed parallel to the cylindrical axis and in outwardly spaced relation to the cylindrical portion. The legs have cut-out notches having a width corresponding to the thickness of the plate. The plate has a cut-out hole with a central circular portion for receiving



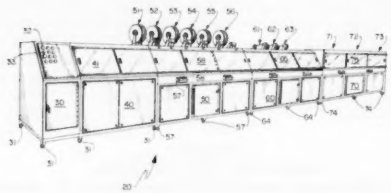
the cylindrical portion of the cage and extensions which form T-slots adapted to receive and hold the notched legs. To permit periodic rotation of the cage within the hole for the purpose of equalizing wear, the legs and T-slots are preferably symmetrically arranged about the cylindrical axis, so that the legs may be flexed to disengage one T-slot and engage in another T-slot.

3,808,662

AUTOMATIC COMPONENT PROCESS SYSTEM

Phillip A. Ragard, Binghamton, N.Y., assignor to Universal Instruments Corporation, Binghamton, England

Filed Mar. 5, 1973, Ser. No. 338,247
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 B **15 Claims**



An electrical component process line for circuit boards having a single control module and a single load and drive module with an unlimited number of attachable component processing and transfer modules, each including a plurality of processing stations therein. Each module is interconnected without modification by a pair of rails upon which the circuit board travels and a transport arm drive shaft.

3,808,663

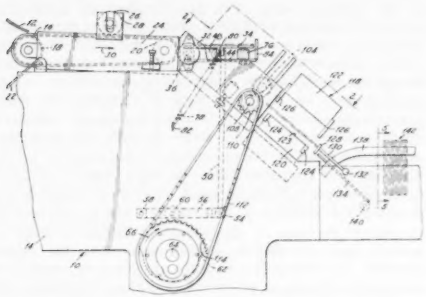
ALIGNING MECHANISM FOR BATTERY GRID CASTING MACHINE

Jack E. McLane, Port Huron, Mich., assignor to Wirtz Manufacturing Company, Inc., Port Huron, Mich.

Filed Sept. 11, 1972, Ser. No. 287,774
Int. Cl. H01m *35/18*
U.S. Cl. 29—204 **11 Claims**

A battery grid casting machine which includes a grid trimming die and means for properly aligning the grid with the

die. The latter means includes a belt conveyor adapted to direct the cast grid onto a horizontally disposed pallet which in turn pivots downwardly so that the grid gravitates to a position



wherein lugs at the leading edge thereof engage a stop which properly aligns the grid before the stop is retracted to feed the grid into the trimming die.

3,808,664

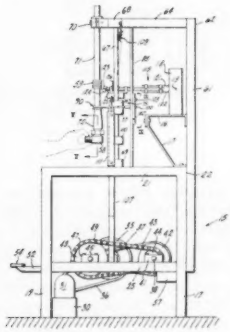
O-RING MOUNTING MACHINE

Robert D. Jaquette, Charlotte, Mich., assignor to Air-Way Manufacturing Company, Olivet, Mich.

Division of Ser. No. 37,955, May 18, 1970, Pat. No. 3,665,578. This application Mar. 15, 1972, Ser. No. 234,957

Int. Cl. B23p *11/02*

U.S. Cl. 29—235 **7 Claims**



An apparatus is provided for mounting O-rings on male members such as pipe fittings, the apparatus comprising a substantially cylindrical mandrel of a diameter adapted to receive a supply of O-rings, and being flared at one end and having an axial chamber provided in said flared end adapted to receive the end of the male members. The mandrel is suitably mounted on a frame and is provided with a finger assembly which upon actuation receives an individual O-ring and moves it axially over the flared portion and causes it to be released therefrom and mounted onto the male member at a position provided therefor. In an improved embodiment means is provided for automatically feeding O-rings over the small end of the mandrel while the apparatus is in operation. In its broad sense the invention includes an apparatus for mounting an elastic annular member on a hub or wheel which is in part of greater diameter than that of the opening of the annular member, as for example mounting a buggy or automobile tire on the rim portion of a wheel.

3,808,665

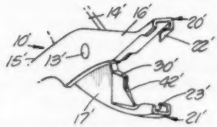
SEAM OPERATING TOOL

Hans E. Bannies, Laguna Beach, Calif., assignor to Walter A. Plummer, Los Angeles, Calif.

Continuation of Ser. No. 189,253, Oct. 14, 1971, abandoned, which is a continuation-in-part of Ser. No. 57,911, July 24, 1970, abandoned, which is a continuation-in-part of Ser. No. 739,354, June 24, 1968, abandoned. This application Mar. 31, 1972, Ser. No. 239,956

Int. Cl. B25b *7/00*; B23p *19/02*

U.S. Cl. 29—243.5 **44 Claims**



A seam operating tool for use in closing and opening interlocking elastomeric seam members of the type having a U-shaped seam member embracing a T-shaped seam member. The plier-like tool has similar channel-shaped jaws facing one another and held by stop means from closing beyond a predetermined spaced-apart operating position. A tang facing inwardly and supported from the bottom of at least one jaw operates to support the T-head for internesting assembly between the hooked end of the legs of the U-shaped seam member and can also be utilized to shift the T-head bodily toward its assembled position. The tool can be readily installed about or removed from a partially closed seam and is operable in either direction depending on whether the user wishes to close or to open the seam.

3,808,666

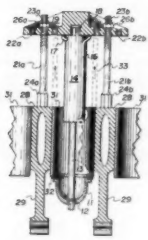
CYLINDER SLEEVE PULLER AND INSERTER

Russell C. Bales, Sr., 121 Broadway No. 23, San Diego, Calif.

Filed Mar. 29, 1972, Ser. No. 239,271

Int. Cl. B23p *19/02*

U.S. Cl. 29—252 **3 Claims**



A cylinder sleeve puller and inserter in which a reversible dome fitting is coupled through a quick disconnect means to a hydraulic piston rod and placed in communication through an adaptor with one end of a cylinder sleeve, the piston rod being concentrically received by the cylinder; a structural bridging plate communicating through spacer legs to the top of an engine block in which the cylinder is located for coupling to the hydraulic cylinder receiving the hydraulic piston rod for exerting a force on the reversible dome fitting and forcing the cylinder sleeve out of the cylinder and surrounding the hydraulic cylinder. When inserting a cylinder, the reversible dome fitting is reversed attached to the hydraulic piston rod and the end of a cylinder sleeve which hydraulically forces the cylinder sleeve into the cylinder.

3,808,667

METHOD OF REPAIRING CRACKED IRON CHILLS

Egon Evertz, and Rolf Seybold, both of Solingen, Germany, assignors to Egon Evertz, Solingen, Germany

Continuation of Ser. No. 188,627, Oct. 12, 1971, abandoned. This application Aug. 17, 1973, Ser. No. 389,218

Claims priority, application Germany, Oct. 24, 1972, 2052327

Int. Cl. B23p 7/00

U.S. Cl. 29—402 9 Claims

A process for repairing cracked iron chills used in steelmaking wherein a cover comprising several coils is wound round the iron chill to prevent extension of the crack.

3,808,668

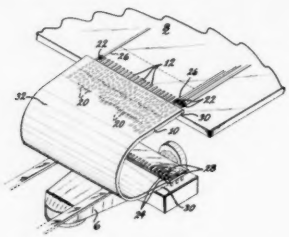
METHOD OF EMPLOYING A SOLUBLE MATRIX TO MAINTAIN A PLURALITY OF OBJECTS IN A FIXED RELATIONSHIP

Kenneth Percy Connell, San Diego, Calif., assignor to The National Cash Register Company, Dayton, Ohio

Filed Mar. 9, 1972, Ser. No. 233,250

Int. Cl. B23q 7/00

U.S. Cl. 29—423 4 Claims



Soluble matrix technique whereby strands of wire are held in a fixed position of any desired configuration for soldering or other processing, following which the matrix is removed by the application of solvent.

3,808,669

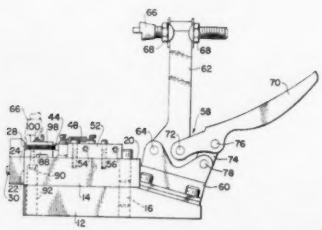
METHOD FOR ASSEMBLING A PRINT HEAD

Joseph L. Mitchner, Wilmington, Ohio; Robert A. Keller, Seminole, and Clyde B. Graham, St. Petersburg, both of Fla., assignors to The National Cash Register Company, Dayton, Ohio

Division of Ser. No. 236,041, March 20, 1973, Pat. No. 3,774,899. This application Aug. 6, 1973, Ser. No. 386,105

Int. Cl. B23q 3/00

U.S. Cl. 29—466 2 Claims



A method and jig for assembling a plurality of thermal print wafers to form a print head. The jig includes a fixture plate having accurate first and second planar surfaces perpendicular to each and joined in a common edge. An alignment bar having first and second control surfaces thereon is secured to said plate so that the control surfaces lie in a common plane which is perpendicular to the first planar surface and parallel to the common edge. The print wafers are sandwiched between clamps and positioned on the jig so that the operative ends of the wafers become aligned in a plane controlled by the control surfaces when spring-loaded levers on the jig are used to urge the operative ends against the control surfaces. A compressing lever on the jig is used to compress the wafers between the clamps prior to securing the clamps together to produce a completed print wafer module. The completed print wafer modules are then aligned on a support member while using an alignment fixture having a plurality of control surfaces lying in a common plane. The operative end of each print wafer module is urged into contact with an adjacent pair of control surfaces on the alignment fixture to align the module, and the module is then secured to the support member. The remaining modules are similarly aligned and secured to the support member to produce a completed print head.

3,808,670

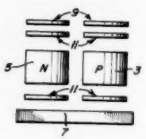
EXOTHERMIC BONDING OF THERMOELECTRIC COUPLES

Winston R. Seetoo; Roman K. Weide, both of Baltimore, Md., and Telesphore L. Charland, Fairfax, Va., assignors to Isotopes, Inc., Westwood, N.J.

Filed May 24, 1972, Ser. No. 256,510

Int. Cl. B23k 31/02

U.S. Cl. 29—473.1 30 Claims



The present invention relates generally to metallurgical bonding methods for joining thermoelectric materials to themselves or to wrought metals and particularly to an exothermic bonding method wherein the bonding composition employed reacts to generate the thermal energy necessary to accomplish alloy bond formation. In one particular embodiment of the invention, elemental tin and tellurim are reacted "in situ" to form stoichiometric tin telluride or a nonstoichiometric tin telluride with an excess of tin, which composition acts under the exothermic conditions of the reaction to form bonds between the elements to be joined. Exothermic chemical reactions between any telluride-former, any selenide-former or any sulfide-former from Periods 4, 5 and 6 of the periodic table are applicable to bonding according to the present invention.

3,808,671

METHOD OF MAKING HOLLOW CAST ARTICLES FROM METAL ALLOYS HAVING LONG FREEZING RANGES

Richard H. Krock, Weston, and William J. Richmond, Reading, both of Mass., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

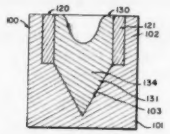
Filed Jan. 11, 1972, Ser. No. 217,014

Int. Cl. B22d 27/04

U.S. Cl. 29—526.5 6 Claims

A technique for improving the physical properties of thin walled castings and reduction or avoidance of hot tearing in

such castings involves casting in the inverted position, preferably using no core. The exterior of the casting is contoured to the shape of a metal mold which causes rapid



solidification with resultant improved soundness and improved physical properties. Metal is then removed from the interior of the casting for example by machining to form the desired wall thickness.

3,808,672

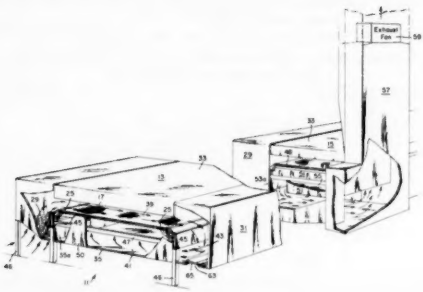
METHOD OF MATERIAL HOLDING AND SMOKE REMOVAL FOR A LASER CUTTER

Rodolfo Castro, 8092 Madia Cir., La Palma, Calif., and Esteban J. Toscano, 1202 No. Pacific Apt. 33A, Oceanside, Calif.

Division of Ser. No. 184,139, Sept. 27, 1971. This application July 10, 1973, Ser. No. 378,118

Int. Cl. B23q *7/00*

U.S. Cl. 29—559 **3 Claims**



To remove combustion by-products and to secure fabric being cut, the cutting area of a laser fabric cutter is enclosed in a hood through which air flows in a stream, first over and then under the enclosed air-permeable cutting surface on which the cloth is supported.

3,808,673

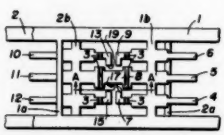
OPTO-ISOLATOR DEVICES AND METHOD FOR THE FABRICATION THEREOF

Michael Lucien Bottini, San Jose, Calif., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 125,044, March 17, 1971, Pat. No. 3,727,064. This application Dec. 8, 1972, Ser. No. 313,307

Int. Cl. B01j *17/00*

U.S. Cl. 29—577 **2 Claims**



The disclosure herein relates to opto-isolators (emitter-detector coupled pairs) and to a method for the fabrication and packaging thereof into devices having a plural lead dual-in-line configuration. Disclosed herein are plastic-packaged devices for optical electronic coupling between light-emitters and light sensors (detectors) useful to effect a variety of electronic functions, and provide extremely high electrical isolation between input and output together with ultra-fast speed of response.

3,808,674

EPITAXIAL GROWTH OF THERMICALLY EXPANDABLE FILMS AND PARTICULARLY ANISOTROPIC FERRO-ELECTRIC FILMS

Maurice H. Francombe; Shu Y. Wu, and William J. Takei, all of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 10, 1972, Ser. No. 279,563

Int. Cl. B01j *17/00*

U.S. Cl. 29—590 **4 Claims**

A coherent, preferably thick film is epitaxially grown on a substrate with a different coefficient of expansion from the film by straining the substrate by bending, epitaxially growing the film on the substrate, and cooling the substrate and film while relieving the strain from the substrate to compensate for stresses formed in the film by the differential in thermal expansion between the substrate and the film. The method is particularly useful where a coherent, epitaxial film with a large anisotropy in thermal expansion is desired. Further, by this method a thick, untwinned coherent film of (010) crystallographically oriented ferroelectric bismuth titanate is epitaxially grown on a (110) oriented spinel crystal substrate.

3,808,675

METHOD OF MAKING PIN ELECTRODES FOR ELECTROSTATIC RECORDING

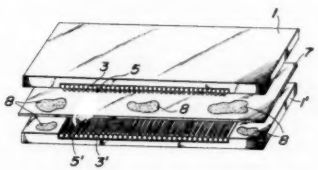
Akihiro Iiyama, and Minoru Gomita, both of Tokyo, Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed July 27, 1972, Ser. No. 275,824

Claims priority, application Japan, July 31, 1971, 46-57806

Int. Cl. G01d *15/08*; **H01s** *4/00*

U.S. Cl. 29—592 **18 Claims**



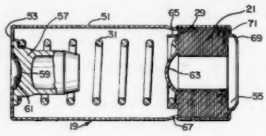
A method of making a pin electrode for electrostatic recording by forming two insulating support plates, each having insulating rod sections juxtaposed thereon in contact with each other and electric wires disposed in successive recessed portions between adjacent insulating rod sections. The two support plates are bonded together while causing the electric wires thereof to face each other with insulation between them.

3,808,676

PROCESS OF MANUFACTURING AN ARMATURE-PISTON SUB-ASSEMBLY

Martin Omer Schrock, Baltimore, and Robert Flohr Burkholder, Towson, both of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed Feb. 16, 1973, Ser. No. 333,018
Int. Cl. H02k 15/00
U.S. Cl. 29—596 5 Claims



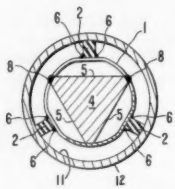
The method of manufacturing an armature-piston sub-assembly adapted to reciprocate within a cylinder of a linear, electric, air compressor or the like. The sub-assembly includes a steel cylindrical shell supported in a cylinder and having one closed end and armature laminations retained in the opposite end. A compression spring is caged between the laminations and the closed end of the shell. Stator laminations surround the sub-assembly and, when energized, move the sub-assembly longitudinally in the cylinder against the spring. The sub-assembly returns under spring force when the stator laminations are de-energized. The inventive method involves forming the cylindrical shell, and assembling the spring means and laminations thereto in a manner minimizing cost and expense and without sacrificing performance or reliability. In addition, the sub-assembly shell may undergo final sizing and finishing after the assembly process to further enhance output and overall performance.

3,808,677

METHOD OF FABRICATING A TRAVELING WAVE TUBE

Charles M. Eallonardo, Palos Verdes Peninsula, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Oct. 10, 1972, Ser. No. 296,494
Int. Cl. H01p 11/00
U.S. Cl. 29—600 6 Claims



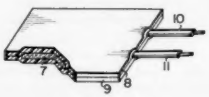
A hollow cylindrical slow wave circuit, such as a helix, is glued to its associated support structure, such as three longitudinally directed dielectric rods spaced at 120° intervals about its periphery. In addition, the slow wave circuit is glued to a mandrel inserted within the slow wave circuit and extending axially thereof. The mandrel is relieved in the peripheral regions juxtapositioned the support rods to allow inward deflection of the slow wave circuit and support structure. The glued sub assembly is then axially inserted within an elongated bore in the body portion of a traveling wave tube. The bore and the sub assembly are sized relative to each other to obtain a slidable interference fit. The relief in the mandrel permits slight inward deflections of the slow wave circuit such that the slow wave circuit and support structure are captured by means of the interference fit within the bore of the body of the tube.

3,808,678

METHOD OF MAKING PRESSURE-SENSITIVE RESISTOR ELEMENT

Shoichi Kubo, and Masakazu Komatsu, both of Kashihara, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 16, 1972, Ser. No. 281,028
Int. Cl. H01c 17/00
U.S. Cl. 29—610 9 Claims



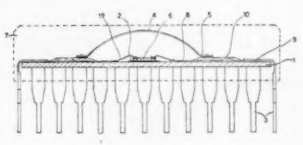
A method for producing a pressure-sensitive resistor element comprising the steps of mixing conductive particles with an elastic polymer resin, pulverizing said particles subsequent to heat-molding them to a semi-hardened state, effecting a renewed heat-molding operation of aggregated particles under pressure at a suitable temperature, and attaching electrodes to said heat-molded particles.

3,808,679

TERMINAL LEADS FOR INTEGRATED CIRCUIT PACKAGE AND METHOD FOR PRODUCING A FRAME OF SAID LEADS

Claudio Dalmasso, Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Torino, Italy

Filed Feb. 14, 1972, Ser. No. 225,903
Claims priority, application Italy, Feb. 16, 1971, 67514/71
Int. Cl. C23f 1/02; H05k 3/06
U.S. Cl. 29—625 4 Claims



The invention utilizes specially prepared legs or feet which are attached to an integrated circuit package. The legs function as electrical communication paths for the internal circuits and also function to physically support the package. The legs include a relatively thin portion and a relatively thick portion; the thin portion is bonded to the package. Since this portion is very thin, it can be attached to the package by methods which do not require the use of special soldering additives. Not only does the invention concern the use of thinned-down legs but also the method by which these legs can be obtained. These disclosed methods include chemical etching limited to areas defined by masks and also chemical etching used in conjunction with electrolytic growing.

3,808,680

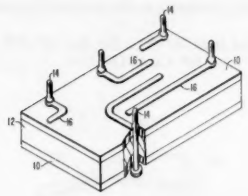
CONTINUOUS PROCESSING FOR SUBSTRATE MANUFACTURE

Pasco F. Lafrate, South Burlington, and Vincent L. Relyea, Jr., Essex Junction, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1972, Ser. No. 267,761
Int. Cl. H05k 3/20, 3/12
U.S. Cl. 29—625 3 Claims

A continuous process for fabricating a substrate for mounting of an integrated circuit thereon, in which an array of conductive patterns is formed in a copper sheet on a flexible insulator by a rotogravure printing and subtractive copper etch

process. The flexible insulator sheet is then cut into individual pieces and a rigid member is mounted to the opposite side of the flexible insulator from the array of conducting patterns by



means of contact pins which fasten the rigid members to the flexible insulator and are electrically connected to the conducting patterns.

3,808,681

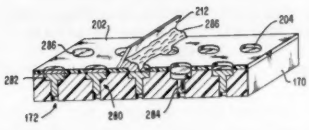
AUTOMATIC PIN INSERTION AND BONDING TO A METALLIZED PAD ON A SUBSTRATE SURFACE

John M. Law, 2880 NE 45 St., Lighthouse Point; Alfred A. Stricker, 963 SE 9th Ave., and Walter Von Kaenel, 510 SE 13th St., both of Pompano Beach, all of Fla.

Division of Ser. No. 176,575, Aug. 31, 1971, Pat. No. 3,736,651. This application Dec. 11, 1972, Ser. No. 315,689

Int. Cl. B23k *31/02*

U.S. Cl. 29—628 **5 Claims**



The invention is a method of automatically bonding elongated articles such as headed pins to metallized contact pads on a ceramic substrate. The elongated articles are automatically inserted into the carrier by (1) placing the carrier in a carrier support, (2) releasing elongate articles onto the carrier, (3) vibrating the support to vibrate the carrier and agitate the elongated articles, (4) applying a pressure differential between the tops and the bottoms of the holes to create air flow into the tops of the holes to suck the elongate articles into the holes, and (5) periodically reducing the pressure differential to allow the vibration to dislodge any jammed articles. The frequency and amplitude of the vibration and the duty cycle and period of the pressure differential are adjusted to dislodge jammed articles during the time the pressure differential is reduced, while retaining in the holes the elongate articles which have been inserted into the holes in a proper orientation. The bonding method comprises the steps of (1) inserting the elongate articles into holes in a carrier, (2) removing any excess articles, (3) masking the carrier to prevent bonding material adhering to the carrier, (4) applying bonding material to the ends of the elongate articles in accordance with the mask, (5) bringing the ends of the elongate articles into contact with the contact points on the substantially flat surface to which the articles are to be bonded, (6) applying pressure to each elongate article individually, (7) heating the contact points on the substrate surface and the elongate articles to form a permanent bond between them and (8) cooling the elongate articles and contact points to allow the bonding material to set.

3,808,682

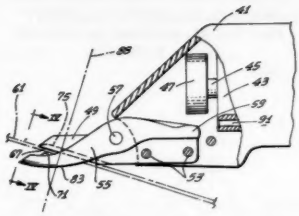
PNEUMATICALLY DRIVEN SHEAR

Kunio A. Sumida, Los Angeles, Calif., assignor to Leonard V. Shapiro, St. Paul, Minn.

Filed Jan. 10, 1972, Ser. No. 216,387

Int. Cl. B26b *15/00*

U.S. Cl. 30—228 **18 Claims**



A three-bladed pneumatically driven shear in which the central, moving blade is provided with a transverse and longitudinal curved surface on its lower edge to reduce frictional contact between the blade and the material to be severed and to allow the cutter to make relatively small radius cuts in the material being severed. The transverse curvature on the bottom of the blade prevents it from biting into the material and inhibiting the turning of the cutter along a radius on the material being severed. The side, fixed blades are beveled on the lower surfaces in order to allow the operator to rotate the cutter about a vertical axis passing through the point of sharing without damaging the workpiece or the cutters while shearing along a curve. One of the side blades is positioned on the cutter so as to extend slightly below the bottom of the other side blade, thereby causing the center blade to commence cutting at one side of the cutter before the other. This facilitates the removal of the chip formed by the severed material by forcing it to curl off to one side away from the cutter. The central blade is formed so as to extend beyond the ends of the side blades in order to facilitate initial engagement with the material to be severed.

3,808,683

PNEUMATIC PRUNING SHEAR

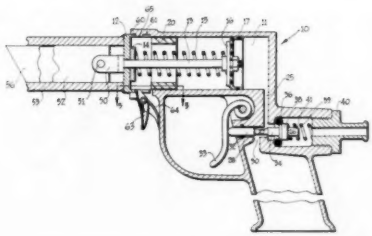
Colin S. Hetherington, 18 Arthur St., Penola, Australia

Filed June 27, 1972, Ser. No. 266,535

Claims priority, application Australia, July 5, 1971, 5414/71

Int. Cl. B26b *15/00*

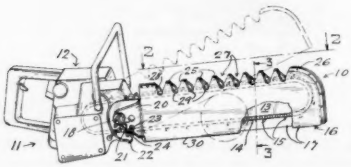
U.S. Cl. 30—228 **2 Claims**



The invention relates to a pneumatic pruning shear wherein a rectangular section blade is coupled to the piston rod of a piston and cylinder assembly and is guided for rectilinear movement within a blade guide, the cutting edge of the blade being its forward end and being inclined with respect to the direction of movement, and the blade guide having a recess

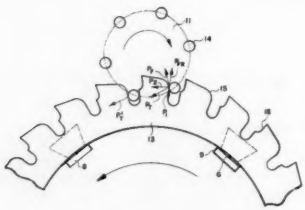
near its forward end which forms a hook, the cutting edge of the blade traversing the recess portion upon operation of the shear so as to sever any limb contained in the hook recess.

3,808,684
ATTACHMENT FOR A CHAIN SAW
Robert L. Ludwig, P.O. Box 26, Mt. Cory, Ohio
Filed Feb. 25, 1972, Ser. No. 229,309
Int. Cl. B27b *17/02*
U.S. Cl. 30—382 **2 Claims**



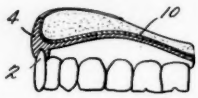
An attachment for a chain saw including a shield which overlaps opposite sides and an end of the chain saw bar. V-shaped notches in the shield are in serial relationship along a cutting edge of the chain saw. A V-base of each notch extends to a point below protruding cutting teeth on the saw chain. V-tops of the notches join, substantially above the cutting teeth, to form a row of stationary guide teeth for introducing small objects into the notches against the cutting teeth. A mechanism is provided for ready attachment and removal of the shield.

3,808,685
SPROCKET DRIVEN ANNULAR SAW
Ruggero Santilli, 74 Bakers Hill Rd., Weston, Mass.
Filed Aug. 16, 1972, Ser. No. 280,978
Int. Cl. B27b *5/14*
U.S. Cl. 30—389 **7 Claims**



The invention relates to a sprocket driven annular saw and, in particular, a sprocket that utilizes the saw teeth to rotate the annular saw blade. The sprocket contains rollers which are rotatable around their own axis to minimize or eliminate frictional forces. Clearance is also provided between the sprocket rollers and the saw blade to prevent loading of the saw blade by saw dust and chips. A specific saw tooth contour is provided to further minimize spurious forces.

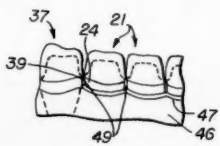
3,808,686
HYDROPHILIC COATING FOR DENTAL PROSTHESES
Harvey Tauman, Tappan; Isadore T. Sklover, Queens Village; Irving Tauman, Bronx, all of N.Y., and Charles K. Kliment, Princeton, N.J., assignors to Hydro-Dent Corporation, New York, N.Y.
Filed June 28, 1971, Ser. No. 157,579
Int. Cl. A61c *13/00*
U.S. Cl. 32—2 **13 Claims**



Denture breath is eliminated from removable dental prostheses, e.g. dentures or orthodontic appliances by applying to the dental prostheses a solution of a water insoluble, organic solvent soluble hydrophilic polymer containing a flavoring agent; preferably the solution is applied as an aerosol. The polymers are preferably hydroxy lower alkyl acrylate or methacrylate polymers. Saccharin can be employed in the formulation to eliminate an initial burning sensation.

Dentures can be cleaned by applying to them a solution of the same type of polymer having a bacteriostatic agent or disinfectant in the formulation.

3,808,687
METHOD OF MAKING DENTAL RESTORATIONS AND PONTIC MEMBER THEREFOR
William G. Millet, 2031 Lone Oak Ave., Napa, Calif.
Filed Mar. 2, 1972, Ser. No. 231,138
Int. Cl. A61c *13/00*
U.S. Cl. 32—2 **6 Claims**



A pontic has a rigid core and a detachable flexible plastic cap of 1 to 2.5 mm wall thickness having the external contour of a tooth. The core extends laterally slightly above the gum line to either side and has an exposed, flat, vertical face which may be secured to a matching face of an adjacent pontic or to a similar face of an insert attached to a wax or plastic coping or a wax or plastic crown which is, in turn, attached to the abutment die. In use, the abutments in a die are waxed in crowns, or copings, as per ordinary practice except for the above-mentioned inserts fixed to the abutment coping or crowns. Carding wax is applied to the tissue area of the model, and the pontics with caps in place are stuck to the wax, forming an indentation, matrix or index. Articulation is checked. The faces of the lateral extensions of the pontic cores are cemented to the adjacent abutment inserts or crown or copings extensions. Caps are then removed. The cores and abutment inserts are then invested as per the lost wax technique and metal cast into the mould cavity of the investment, also as per lost wax technique. The metal is porcelainized as in ordinary practice.

3,808,688

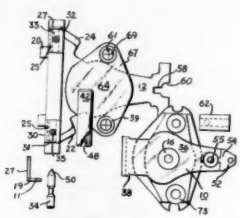
CENTRIC RELATING DEVICE AND INSPECTION MEANS

Niles F. Guichet, 320 Olympia Pl., Anaheim, Calif.

Continuation-in-part of Ser. No. 166,187, July 26, 1971, Pat. No. 3,750,289. This application July 24, 1972, Ser. No. 274,573

Int. Cl. A61c 11/00

U.S. Cl. 32—32 11 Claims



A device is described which can be used to orient dental casts in a precise centric occlusion. The device comprises upper and lower frames that have dental cast support means and that are hinged together in a joint along the condylar axis. The joint permits only pivotable movement of the members in a medial plane. One of the frames, preferably the lower, has centering pivot pins that seat in mating recesses in the joint component of the other frame. The centric relating device is maintained in a precise alignment by use of a centric inspection means. The centric inspection means comprises a pair of blocks, one of which bears at least one index mark with a calibrated field to observe any angular component of misalignment of the frames. The device is also provided with indicating means at either side of the blocks to indicate any vertical component of misalignment of the frames. The inspection means can also be used to check the alignment of a dental articulator. The centric relating device is used to mount dental casts to their support rings while using check bite means to orient the casts in the exact anatomical relationship.

3,808,689

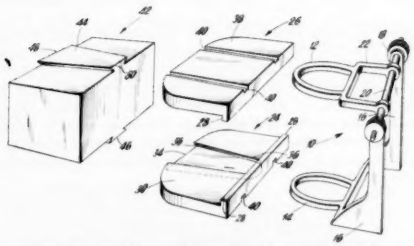
DENTAL ARTICULATOR TRAYS

S. Charles Spinella, Mayberry Mansion Apt. C118, 5200 N.E. 24th Ter., Fort Lauderdale, Fla.

Filed Dec. 1, 1972, Ser. No. 311,104

Int. Cl. A61c 11/00

U.S. Cl. 32—32 15 Claims



Improved dental articulators of either the pivotal or stem type are provided with a tray permanently attached to each of the two articulator platforms, and each tray has a keyway slot of dovetail cross section extending longitudinally along its inner or operating face as a coupling means for engaging a mounting base bearing a dental cast on one side and a corresponding dovetail key on the other side for engaging said slot. The key and keyway taper to a substantial extent in the horizontal plane as they approach a pivot or stem at the back of the articulator, and they taper at least slightly in the vertical plane in the same direction to provide a coupling system that can be easily and rapidly engaged or disengaged and yet locate the mounting base in any similarly equipped articulator with great precision. Also, a novel method of constructing this articulator involves assembling preformed trays with their keyways engaging keys of two opposite faces of a mounting jig to maintain exact alignment of the trays and their keyways while the other sides of the trays are being permanently cemented to the platforms of the articulator.

3,808,690

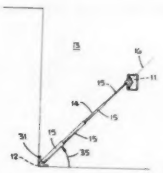
TELESCOPIC MEASUREMENT TRANSFER DEVICE

Norman J. Balder, 416 N. 14th St., Terre Haute, Ind.

Filed Jan. 5, 1973, Ser. No. 321,447

Int. Cl. G01b 3/00

U.S. Cl. 33—1 CC 6 Claims



A telescopic device for locating a first area on one side of a wall and then a second area on the opposite side of the wall immediately adjacent and opposite the first area. A telescopic rod has a top end with a rectangular frame pivotally mounted about the longitudinal axis of the rod. The bottom end of the rod has a V-shaped frame pivotally mounted thereto. Means are provided to control the pivotal movement of the rectangular frame about a mounting axis perpendicular to the longitudinal axis of the rod. The V-shaped frame includes a pair of arms pivotally mounted together about a mounting axis with stop means provided to limit the maximum included angle between the arms to ninety degrees.

3,808,691

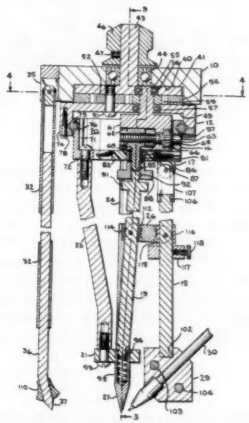
APPARATUS FOR DRAWING ELLIPSES

Russell C. Chase, 6626 Guhn Rd., Houston, Tex.

Filed Nov. 29, 1972, Ser. No. 310,464

Int. Cl. B43l 11/04

U.S. Cl. 33—30 G 10 Claims



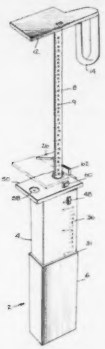
The invention presents apparatus for drawing ellipses. A center pivot leg and an inscribing leg are pivotally connected intermediate their lengths. The inscribing leg rotates as the instrument is rotated, to draw an ellipse. The upper end of the center pivot leg is rotated in planetary motion around the axis of the instrument as the inscribing leg is rotated, causing the lower end of the center pivot leg to pivotally move to alter the length of the radius vector of the ellipse as the ellipse is drawn. The angularity between the center leg and the inscribing leg is altered during rotation so that an ellipse is drawn.

3,808,692

TAPE MEASURE COUNTER

Morton Gartner, 60 E. 8th St., New York, N.Y.

Filed Jan. 3, 1972, Ser. No. 214,922
Int. Cl. G06m 9/00; G01b 3/10, 5/06
U.S. Cl. 33—138 **16 Claims**



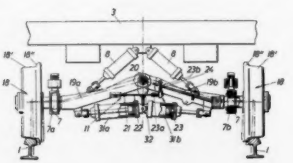
A device for counting identical items by measuring the thickness of a sample known quantity and relating such measurement to a larger unknown quantity under the same degree of pressure as the sample quantity.

3,808,693

MOBILE TRACK GAGE SURVEYING APPARATUS

Franz Plasser, and Josef Theurer, both of Johannesgasse 3 A-1010, Vienna, Austria

Filed Sept. 28, 1972, Ser. No. 292,878
Claims priority, application Austria, Oct. 4, 1971, 8526/71
Int. Cl. G01b 7/04; B61k 9/00
U.S. Cl. 33—144 **17 Claims**



Two flanged wheels transversely pressed against the track rails survey the track gage as the spacing between the rail sensing wheels changes. A pivot connection is provided between pivotal carriers of the wheels, the pivot connection being positioned outside an imaginary straight line connecting the wheel axes and the pivot axis thereof being substantially parallel to a vertical plane defined by the track axis. A measuring device is actuatable by the relative movement of the wheels in respect of each other, the measuring device being connected to the pivotal carriers at a distance from the pivot axis.

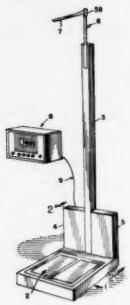
3,808,694

WEIGHING AND HEIGHT MEASURING DEVICE

William Y. Hutchinson, Chicago, and Walter P. Kushmuk, Niles, both of Ill., assignors to Continental Scale Corporation, Chicago, Ill.

Division of Ser. No. 83,924, Oct. 26, 1970, Pat. No. 3,667,561.
This application Dec. 13, 1971, Ser. No. 207,328
Int. Cl. G01b 7/00
U.S. Cl. 33—169 R **1 Claim**

A device for measuring weight and/or height especially adapted for use with a remote digital read-out system comprising a mechanical leverage weighing structure having a high degree of sensitivity and low friction and hysteresis coupled



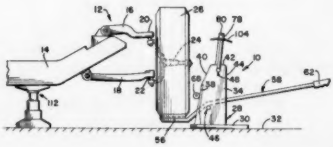
with a compatible electronic measuring system and/or a height measuring means compatible with said system.

3,808,695

TESTING AND MEASURING APPARATUS FOR VEHICLE WHEEL FRONT END ASSEMBLY

Clarence E. LaMoreux, Winter Haven, Fla., assignor to Associated International Corporation, Winter Haven, Fla.

Continuation-in-part of Ser. No. 85,325, Oct. 30, 1970, Pat. No. 3,736,665. This application July 28, 1972, Ser. No. 276,176
Int. Cl. G01b 5/24, 3/22
U.S. Cl. 33—169 R **15 Claims**



Axial and radial play of ball joints in front end wheel assemblies of vehicles, are measured by a testing device from which a pair of wheel engaging elements project. A handle connected to one of the wheel engaging elements is actuated to bring that element into engagement with the wheel while retracting the other wheel engaging element in order to select the measurement to be made. Movement of either wheel engaging element is registered by an indicator on an adjustably positioned dial.

3,808,696

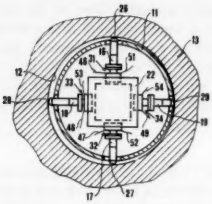
MEASURING APPARATUS INCLUDING POSITION CORRECTING MEANS

Mario Possati, Bologna, Italy, assignor to Finke Italiana Marposs Soc., In Accomadita Semplice di Mario Possati & Co., Bentivoglio-S. Marino, Italy

Filed Dec. 27, 1971, Ser. No. 212,105
Claims priority, application Italy, Dec. 29, 1970, 3651/70
Int. Cl. G01b 5/12, 5/02
U.S. Cl. 33—178 E **7 Claims**

Measuring apparatus which corrects for errors in positioning relative to the part to be measured comprising first and second pairs of feelers equipped with transducers and electrical means coupled to the transducers. The electrical means

provides an output which has a main component corresponding to the sum of the transducer output signals of one pair and



a corrective component corresponding to the square of the difference between the transducer output signals of the other pair.

3,808,697

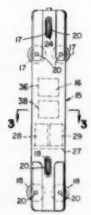
INCLINOMETER

Earl B. Hall, 163 Carte Ramon, Greenbrae, Calif.

Continuation-in-part of Ser. No. 729,869, April 22, 1968, abandoned, which is a continuation-in-part of Ser. No. 649,938, June 29, 1967, abandoned. This application Jan. 28, 1970, Ser. No. 6,515

Int. Cl. G01c *9/16;* **E21b** *47/022*

U.S. Cl. 33—312 **2 Claims**



An inclinometer moves along a path having an attitude orientater. Its housing has a follower such as wheels engaging the attitude orientater, as in grooves. A pair of linear servo-accelerometers are mounted horizontally and perpendicular to each other in the housing. A detector determines the amount of departure from horizontal of each accelerometer. In some forms there is a third accelerometer of the type indicating the amount of departure from vertical to the longitudinal axis of the inclinometer.

3,808,698

METHOD AND APPARATUS FOR DRYING WASHED MOTOR VEHICLES AND FOR HEATING THE WASHING AND DRYING STATIONS

Armin Peters, Solbad Melle, Germany, assignor to A Rohe, Offenbach am Main, Nordring, Germany

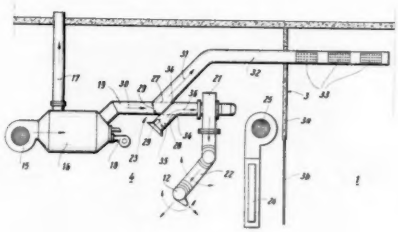
Filed Apr. 4, 1973, Ser. No. 347,654

Claims priority, application Germany, Apr. 10, 1972, 2217090

Int. Cl. F26b *3/12*

U.S. Cl. 34—33 **14 Claims**

A washing station is divided from a drying station by a suspended barrier which provides for overhead clearance for the passage of motor vehicles on a moving endless conveyor from the washing station to the drying station. The washing station includes a suitable combination of rotatably mounted washing brushes. The motor vehicle is washed by the combination brushes in the washing station and passes beneath the suspended barrier on the endless conveyor to the drying station. An overhead swivelable nozzle and stationary side nozzles positioned in the drying station combine to discharge a stream of warm air downwardly upon the horizontal surfaces and laterally upon the vertical surfaces of the washed motor vehicle respectively to dry the vehicle as it passes through the drying station. A portion of the warm air discharged from the overhead nozzle passes from the drying station below the suspended barrier into the washing station and follows a circulating path therethrough to provide heat in the washing station during the washing operation. A low pressure fan positioned in the drying station draws the warm air circulating throughout the washing and drying station into an air heating device. Air



is heated in the air heating device and is directed through a conduit to a high pressure fan. The high pressure fan feeds heated air to the overhead nozzle from which the air is discharged for drying the motor vehicle in the drying station. A suction pipe fitting discharged into the drying station draws heated circulating air from the drying station to the high pressure fan. A reversing box provided in the first conduit selectively directs the flow of heated air to the overhead nozzle for drying or through a second conduit to the washing station for supplying warm air to heat the washing station. The reversing box is operable to provide simultaneous warm air heating in the washing station and warm air drying of washed motor vehicles in the drying station.

3,808,699

DRYING METHOD AND APPARATUS THEREFOR

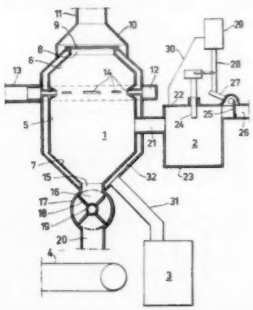
Johan Holger Graffman, 9 Blomstervagen, Danderyd, Sweden

Filed Sept. 6, 1972, Ser. No. 286,544

Claims priority, application Sweden, Sept. 10, 1971, 11493/71

Int. Cl. F26b *5/04*

U.S. Cl. 34—92 **6 Claims**



A drying apparatus for moist material comprising a drying chamber having material supply inlets, a material discharge

outlet and a pressure check valve outlet for exhausting gases, a combustion chamber having a stop valve inlet for combustibles, and an outlet in the form of a conduit interconnecting the combustion chamber with the drying chamber and means to ignite the combustibles in the combustion chamber.

3,808,700

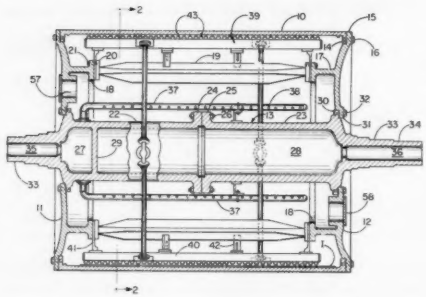
ROTARY DRYING DRUM

James J. Kraus, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 26, 1972, Ser. No. 318,009

Int. Cl. F25d *11/02*

U.S. Cl. 34—124 **4 Claims**



Rotary drying drum for high-speed drying of thin webs such as paper or the like comprising a hollow cylinder mounted for rotation and adapted to receive a condensable fluid and discharge condensate. Improved heat transfer is obtained by spoiler bars positioned around the inner drum circumference generally parallel to the drum axis. The invention includes dividing these bars into segments and attaching each segment; a single fixture may be used for each segment and end contact with adjacent bar segments prevents the segments from rotational movement around the fixture point. As a result, performance is improved due to the ability of the bar segments to expand and flex with the drum's surface without excessive stress on the attaching fixtures.

3,808,701

APPARATUS FOR DRYING FLUENT MATERIALS

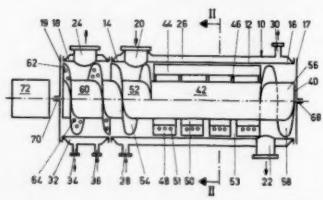
Robert Theophil Bachmann, Oberengstringen, Switzerland, assignor to Luwa A.G., Zurich, Switzerland

Filed June 28, 1972, Ser. No. 267,225

Claims priority, application Switzerland, July 1, 1971, 9664/71

Int. Cl. F26b *19/00*

U.S. Cl. 34—179 **21 Claims**



An apparatus for drying fluent materials with an approximately horizontally arranged cylindrical conduit as well as a rotor rotating internally of such conduit. The rotor supports vane-like elements operatively associated with the inner wall of the conduit. The rotor carries a number of such elements which are successively arranged in the direction of rotation thereof and serve for wiping, circulating, comminuting and scraping of the fluent material. One of the elements is constructed at least as a wiper element and a further element is constructed at least as a scraper element, the free edge of which travels closer to the inner wall of the conduit that the free edge of the wiper element. The scraper element has throughpassage openings for scraped-off material.

3,808.702

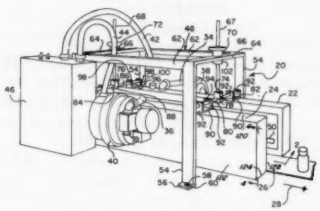
HEAT SHRINK TUNNEL FOR ENSURING UNIFORM SHRINKAGE OF HEAT SHRINKABLE BANDS ON ARTICLES OF VARIOUS SIZES

John Laessig, Newtown Square, Pa., assignor to Gilbreth Company, Philadelphia, Pa.

Filed Mar. 15, 1973, Ser. No. 341,412

Int. Cl. F26b *19/00*

U.S. Cl. 34—218- **16 Claims**



A heat shrink tunnel for shrinking heat shrinkable articles disposed on a conveyor including a pair of elongated bilateral heat ducts each of which is disposed on a respective side of said conveyor. Each duct includes a vent extending substantially the entire length thereof. Means are provided to force air into the ducts and through their associated vents to contact the articles on the conveyor as the articles move downstream. The ducts are supported by adjustable means and are oriented such that each extends upwards away and converges laterally towards the conveyor in the downstream direction.

3,808,703

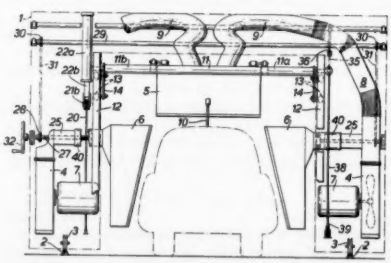
VEHICLE DRYING APPARATUS

Nobuyoshi Kamiya, Takarazukashi, Japan, assignor to Toyo Enterprises Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 61,065, Aug. 5, 1970, abandoned. This application Dec. 7, 1972, Ser. No. 313,103

Int. Cl. F26b *19/00*

U.S. Cl. 34—229 **4 Claims**



This invention provides a vehicle drying apparatus including an upper air-blowing nozzle and a pair of side air-blowing nozzles, the former being automatically adjusted, and the latters being previously adjusted by hand. in relation to a vehicle to

be dried, so that the vehicle can be dried by air under pressure through these blowing nozzles with adequate distances therebetween.

3,808,704

ARRANGEMENT FOR SIMULATING ELECTRICALLY RADIATION AND LIGHT FROM NUCLEAR EXPLOSIONS

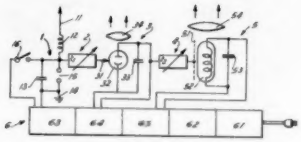
Frank Frungel, Herwigredder 105a, 2 Hamburg 56, Germany

Filed Nov. 19, 1971, Ser. No. 200,538

Claims priority, application Germany, Nov. 24, 1970, 2057735

Int. Cl. G09b *23/20*

U.S. Cl. 35—1 **9 Claims**



A portable arrangement for simulating the electromagnetic pulse and light of a nuclear explosion. An antenna circuit has an inductance and a charging capacitor. A spark gap is connected in parallel with the capacitor. To simulate the electromagnetic pulse, the capacitor is charged from a high voltage until breakdown occurs across the spark gap, thereby causing the EMP to be radiated from the antenna. An electronic timing circuit is connected to the capacitor and furnishes a signal igniting a flash a predetermined time interval after creation of the EMP. A second timing circuit initiates a second flash a predetermined time interval following the first flash. The EMP and first flash test the nuclear detection sensor, while the second tests the operation of a protective shutter associated with the sensor.

3,808,705

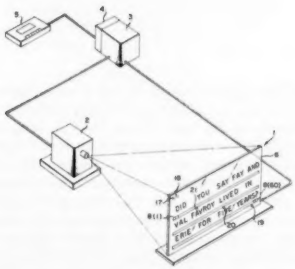
INSTRUCTIONAL APPARATUS FOR DISPLAYING A CHANGEABLE STILL SEQUENCE AND INCREMENTALLY ADVANCING A PATTERN THEREON

Arthur Robert Schmoyer, 11708 River Rd., Potomac, Md.

Filed Oct. 29, 1971, Ser. No. 193,938

Int. Cl. G09b *13/02*

U.S. Cl. 35—6 **10 Claims**



A method and apparatus for teaching a sequence of responses, such as typing, utilizes a device for displaying to a student a changeable still sequence comprising a multiplicity of characters sometimes divided into groups and subgroups, and for incrementally advancing a pattern thereon which serves to sequentially emphasize the characters. The emphasis of each character is retained until the end of a subgroup, group or sequence, at which time the emphasis is removed and when at the end of sequence, a new sequence of characters is displayed and the cycle repeated. The display device may be used in the production of "animated" motion pictures or video recordings.

3,808,706

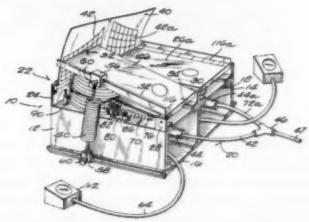
PNEUMATIC LUNG ANALOG

Kenneth C. Mosley, Grand Rapids, and Clare E. Barkalow, Comstock Park, both of Mich., assignors to Michigan Instruments, Inc., Grand Rapids, Mich.

Filed Jan. 29, 1973, Ser. No. 327,503

Int. Cl. G09b *23/28*

U.S. Cl. 35—17 **38 Claims**



A vertically oriented bellows has a fixed plate at one end and a movable plate at the other end. As air flows into the bellows, the movable plate pivots relative to the fixed plate and the free end thereof is cooperative with a readout panel to indicate the volume of the bellows. The plates are interconnected by an adjustable spring urging the plates toward each other when the bellows are expanded to simulate lung compliance. Selected tubes having calibrated flow characteristics interconnect the bellows to a lung ventilator to simulate lung resistance. Preferably, a pair of bellows are arranged in mutual association together to simulate a pair of lungs in order to analyze their interdependency.

3,808,707

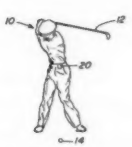
PHYSICAL TRAINING SYSTEM

Clyde H. Fink, 4804 Lindale Dr., Wichita Falls, Tex.

Filed Apr. 3, 1972, Ser. No. 240,694

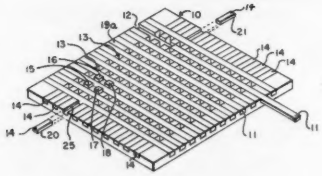
Int. Cl. G09b *15/06*

U.S. Cl. 35—29 A **3 Claims**



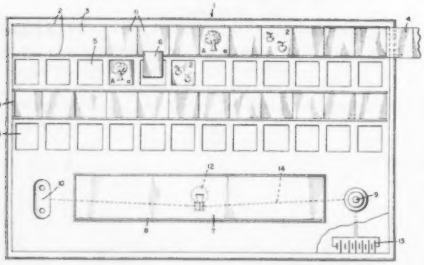
In a physical training system, an audible signal comprising an analog of a physical activity is generated while an individual practices the activity to assist the individual toward optimum performance of the activity. The audible signal is equal in duration to the physical activity and varies in frequency and intensity in accordance with the rate of muscular activity and with the level of muscular exertion which characterize optimum performance of the physical activity. In one embodiment of the invention the audible signal is reproduced from a recording as the physical activity is practiced. In another embodiment the audible signal is electronically generated.

3,808,708
MATHEMATICAL INSTRUCTION GAME
Elizabeth J. Huskin, P.O. Box 186, Chadds Ford, Pa.
Filed Oct. 20, 1972, Ser. No. 299,421
Int. Cl. G09b *19/02*
U.S. Cl. 35—31 D **8 Claims**



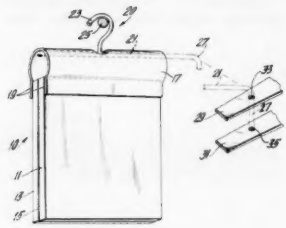
A playing board of wood or other appropriate material contains a number of parallel rows of cubicles. There are a plurality of cubes having on some faces problems in the multiplication or division tables and on opposed faces answers to those respective problems. The players may select a certain number of cubes and then try to arrange the problem and answer cubes of a particular number in their proper tabular positions in adjacent rows of cubicles. Sliding board pieces contain answers to the problems to enable the player to check his answers. Other sliding pieces contain indicia representative of fractions or elementary slide rule markings to teach its basic operation.

3,808,709
CHILD TEACHING BOARD GAME
Vincenzo Tozzi, Via del Casaletto 35, Roma, Italy
Filed Dec. 7, 1972, Ser. No. 312,873
Claims priority, application Italy, Dec. 7, 1971, 54607/71
Int. Cl. G09b *1/06*
U.S. Cl. 35—35 H **6 Claims**



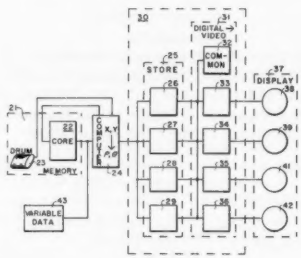
A child teaching board game in the form of a rectangular thin box having on its front surface guideways for the insertion of slides provided with a plurality of panels each containing a figure representing a thing or animal well known to children and in the upper corners the initial letter of said thing or animal, a series of pigeon-holes below said guideways for receiving cards representing the same things and animals, and a viewer in the lower portion of said front surface for receiving and viewing said cards in any desired order while they are being illuminated by a source of light arranged therebehind.

3,808,710
WALLPAPER DISPLAY APPARATUS
Don Ackerman, Scotch Plains, N.J., and Martin Grossman, Broomall, Pa., assignors to Economy Color Card Co. Inc., Roselle, N.J.
Filed May 31, 1973, Ser. No. 365,551
Int. Cl. G09f *5/04*
U.S. Cl. 35—55 **4 Claims**



Wallpaper display apparatus includes two conforming wallpaper samples laminated via a flexible adhesive, curling of the specimens being inhibited by such lamination. The assembled samples are adhesively secured within a top-edge closure, having sample suspension apparatus secured thereto.

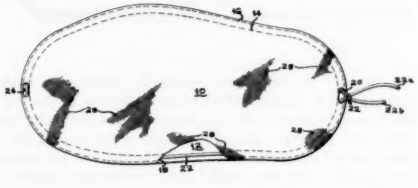
3,808,711
COLLISION AVOIDANCE RADAR SIMULATOR SYSTEM
Robert J. Membrino, Silver Spring, and Edward F. Magee, Crofton, both of Md., assignors to The Singer Company, Binghamton, N.Y.
Filed Apr. 13, 1972, Ser. No. 243,804
Int. Cl. G09b *9/00*
U.S. Cl. 35—10.4 **16 Claims**



A training system for simulating marine radar includes a digital computer, standard radar display equipment, and interfaces connecting the two. This system is designed to utilize computer abilities and time better than earlier systems. In this system, a magnetic drum contains digital information representing all of the radar targets in the entire possible gaming area. At any time for any own ship, information representing the location of the ship is inserted into the computer which then locates the particular subset of information recorded on the drum for that location. The entire subset is transferred to core memory and utilized in the computer. The computer transforms the information from the rectangular coordinates in which it was stored on the drum into polar coordinates in which it will be displayed. The entire subset of information, in polar coordinates, is then stored in a separate memory, and the original subset in the original core memory is replaced by the subset for the next own ship. The polar coordinate information is applied to an interface where it is converted from digital information into video information. The interface contains separate registers for each of the own ship displays, and

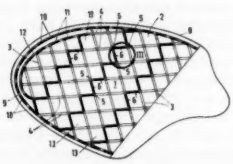
the information for a single sweep is stored in those registers for direct application to the display.

3,808,712
SHOE SOLE PROTECTOR
Robert L. Elliott, 2222 Alemany Bld., San Francisco, Calif.
Filed Apr. 2, 1973, Ser. No. 346,840
Int. Cl. A43b 1/10
U.S. Cl. 36—7.3 **4 Claims**



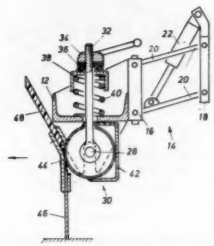
A protective cover for keeping the soles of sport shoes dry and clean when leaving the sports arena, comprising two coextensive, superposed plies of a flexible plastic sheet material of elongated ellipsoidal conformation stitched together along their periphery by two parallel, relatively spaced seams which form a peripheral sheath that is left open at the narrow ends of the ellipsoid for threading through it a cord of elastic material leaving both its ends protruding from one of said open areas. One of the external surfaces of the plies may be roughened.

3,808,713
RUNNING SOLE OF FLEXIBLE SYNTHETIC MATERIAL FOR SPORTS SHOES
Adolf Dassler, Am Bahnhof, D-8522 Herzogenaurach, Germany
Filed Apr. 6, 1973, Ser. No. 348,593
Claims priority, application Germany, Apr. 7, 1972, 2216872
Int. Cl. A43b 13/04
U.S. Cl. 36—32 R **16 Claims**



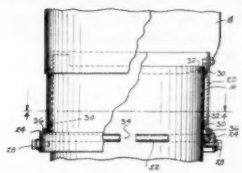
A running sole of flexible synthetic material for sports shoes, more particularly for athletic shoes, wherein, at least in the front portion of the sole, a plurality of integrally molded crossbars extend downwardly from the running surface of the sole and taper away therefrom. In order to impart an adequate grip on various surfaces, at least in some areas, roof-shaped projections extend downwardly beyond the cross bars, the projections having sharp edges extending substantially parallel to the running surface and also to the longitudinal direction of the crossbars, with the width of the bases of the projections corresponding substantially to the width of the crossbars. In a preferred construction the crossbars intersect one another and form therebetween honeycomb-like depressed areas, each individual roof-shaped projection being disposed between adjacent points of the intersection of the crossbars.

3,808,714
DOUBLE BLADED SNOWPLOW WITH OVERLOAD RELEASE
Gottfried Reissinger, Weilheimerstrasse 7, and Harro Reissinger, both of 8124 Seeshaupt, Germany, assignors to said Gottfried Reissinger, by said Harvo Reissinger
Filed June 3, 1970, Ser. No. 43,033
Claims priority, application Germany, June 9, 1969, 1929177
Int. Cl. E01h 5/06; A01b 61/04
U.S. Cl. 37—42 VL **9 Claims**



The invention relates to a street clearing device having a first scraping blade, preferably constructed of steel, and a second scraping blade, constructed of rubber or plastic. The second scraper blade is adapted to be moved between an inoperative position and an operative position where it acts upon the street in place of the first scraping blade, and can be rotated about an axis substantially parallel to the operating edges of both scraping blades in the case of overloading when an obstacle is encountered.

3,808,715
SNOW THROWER WITH ROTATABLE SNOW SPOUT
Joseph Haban, Mound & Marquette Sts., Racine, Wis.
Filed Aug. 11, 1972, Ser. No. 279,924
Int. Cl. E01h 5/00
U.S. Cl. 37—43 R **5 Claims**



A snow auger rotates within a horizontal housing and has throwers which discharge snow out of an opening in the top of the housing. A cylindrical snow conduit is attached to the housing around the snow discharge opening and a snow-directing spout with a downwardly-projecting cylindrical collar is swivelingly attached around the snow conduit in overlapping relationship with the latter. A plurality of dimples are formed in the cylindrical collar in the area where it overlaps the snow conduit to space the two members sufficiently apart to prevent particles of foreign matter from lodging therebetween to interfere with swiveling. A spindle is rotatably attached to the housing and a cable has spaced portions wound around the spindle and extending in diverging relationship therefrom to pass around the cylindrical collar for causing swiveling of the latter. A member including a pair of spaced parallel arms is mounted for movement parallel to the axis of the spindle and engages the spaced cable portions to prevent improper winding of the cable around the spindle.

3,808,716

DREDGE CUTTER HEAD

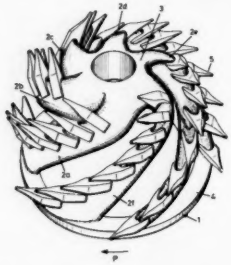
Adalbertus Raphael Maria Verbeek, Heemstede, Netherlands, assignor to Van Hattum en Blankevoort B.V., Beverwijk, Netherlands

Filed Feb. 11, 1972, Ser. No. 225,554

Claims priority, application Netherlands, Feb. 11, 1971, 7101833

Int. Cl. E02f 3/92

U.S. Cl. 37—67 7 Claims



A cutter head construction for use in a cutter dredger, comprising a plurality of spiral-helical arms which on one end join together at a hub and on the other are connected by means of a supporting ring, to which arms are secured lateral ground working teeth each consisting towards their operative ends of a tooth crown extending from a tooth crown base, the representative tooth tips of which crowns, defined as the points halfway the tip or the middle of a cutting rib formed at the free end of the unworn tooth crown and the projection on the axis of the tooth crown of the centre of the wearing surface of the worn tooth crown, together define an imaginary enveloping plane in the form of a plane of revolution co-axial with said hub and said ring.

3,808,717

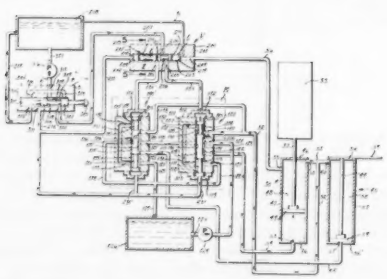
FLUID CONTROL SYSTEM FOR FLOOR AND EJECTOR GATES OF EARTH BOWEL SCRAPERS

Ronald K. Schantz, Morton, Ill., assignor to Westinghouse Air Brake Company, Pittsburgh, Pa.

Division of Ser. No. 174,595, Aug. 25, 1971, Pat. No. 3,733,964. This application Feb. 15, 1973, Ser. No. 332,948

Int. Cl. F15b 11/16; E02f 3/62

U.S. Cl. 37—124 6 Claims



A fluid control system for an elevating scraper incorporating a master control valve for selectively directing fluid to a floor gate cylinder and an ejector gate cylinder, and a pilot sequence valve for sequentially operating said master control valve to assure that fluid will be initially directed to the floor gate cylinder and then subsequently to the ejector gate cylinder; there being a fluid line connecting the floor gate cylinder and the pilot sequence valve for passage of fluid to the latter after the floor gate has been fully extended.

3,808,718

BAGGAGE TAG-AND-CHECK DEVICE FOR AIRLINES AND THE LIKE

James O. Christiansen, Massapequa Park, N.Y., assignor to Avery Products Corporation, San Marino, Calif.

Filed June 29, 1973, Ser. No. 375,109

Int. Cl. A44c 3/00

U.S. Cl. 40—2 R 9 Claims

A two-ply tag-and-check device for passenger's baggage delivered to an airline before boarding and to be claimed by the passenger on arrival at his destination, comprising a relatively long baggage-tag portion constituting one of the two plies thereof and a relatively short claim-check portion constituting the other ply thereof and covering and peelably adhered to an area of the baggage-tag portion at or near one end thereof by means of the below-mentioned two sets of juxtaposed adhesive and release coatings on facing and registering areas of the baggage-tag and claim-check, respectively. Such juxtaposed adhesive coatings and release coatings maintain the baggage-tag portion and the claim-check portion in assembled relation to each other prior to the ultimate use of the device. The major portion of the claim-check-covered area of the baggage-tag portion is coated with a pressure-sensitive adhesive and a minor portion of said area is coated with a release-coating, as for instance a silicone coating. The area of the claim-check juxtaposed to and covering the adhesive-coated area of the baggage-tag portion is coated with a release-coating, through which such area of the claim-check is peelably adhered to the adhesive-coated area of the baggage-tag. The area of the claim-check juxtaposed to and covering the release-coated area of the tag is coated with a pressure-sensitive adhesive through which such area of the claim-check is peelably adhered to the release-coated area of the baggage-tag. The outer face of the baggage-tag portion has imprinted thereon the name or symbol of the airline and the name or symbol of the destination of the baggage and the routing information (if not a through-flight) and a baggage-identifying number and the word "flight" with an adjoining delineated area for writing in the flight-number. The outer face of the claim-check portion has corresponding imprinting thereon. After the claim-check portion has been peeled from the baggage-tag portion it is adhered to the passenger's ticket-envelope or folder by means of the pressure-sensitive adhesive-coating on the minor portion of the face thereof opposite its imprinted face, and the baggage-tag portion is looped around the handle of the baggage with the imprinted side thereof facing outwardly and the two ends thereof are adhered to each other by the pressure-sensitive adhesive-coating covering the aforementioned end area thereof.

3,808,719

ESCAPEMENT MECHANISM

Albert Stubbmann, Franklin Lakes, N.J., assignor to Kohner Bros. Inc., East Paterson, N.J.

Division of Ser. No. 122,471, March 9, 1971, Pat. No. 3,698,252. This application July 3, 1972, Ser. No. 268,307. The portion of the term of this patent subsequent to Oct. 17, 1989, has been disclaimed.

Int. Cl. G09f 11/00

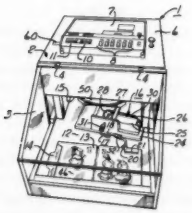
U.S. Cl. 40—28 R 3 Claims

A driven mobile having a plug secured to a first shaft with a plurality of arms radially extending from the plug. Objects of interest are secured to each arm and means is provided for allowing each object to oscillate about the arm to which it is attached as said first shaft is rotated. A spring motor is provided for supplying energy for rotating the first shaft. An escape-

ment mechanism controls the rotation of the first shaft and includes a tube that is rotatable in conjunction with the first shaft. The tube is enclosed at its ends and has a pair of magnets therein. The magnets have their south poles facing each other with the north poles diametrically opposed to each other. The magnets can move within the tube. A lever is positioned adjacent the tube bottom when the tube is vertical, is rotatable about an axis to a vertical position and includes a stop. The stop prevents rotation of the tube when the lever is in the vertical position. A magnetic means biases the lever to the vertical position. If the tube is in a vertical position with

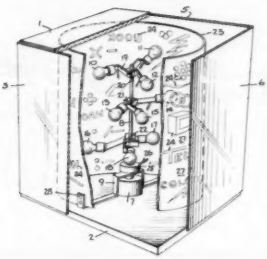
the magnets therein at the top of the tube, the lever will be in a vertical position as a result of the magnetic biasing means and the stop will prevent rotation of the tube. The magnets in the tube will descend to the bottom of the tube under the influence of gravity and the bottommost magnet overcomes the magnetic biasing means and any frictional forces and causes the lever to be moved out of its vertical position. Consequently, the tube and first shaft are free to rotate. After the tube is rotated a few degrees, the magnetic biasing means then moves the lever to a vertical position and the cycle is again repeated after the tube has come to a vertical position.

3,808,720
AUDIO-VISUAL DISPLAY APPARATUS
John Allen Smith, 1368 4th Ave., Coraopolis, Pa.
Filed Dec. 29, 1971, Ser. No. 213,251
Int. Cl. G09f *27/00*
U.S. Cl. 40—28.3 **11 Claims**



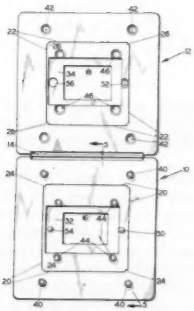
An audio-visual display apparatus principally adapted to visually display media in the form of pages in a book together with a page turning arm so that the observer can visually see the intelligence printed on the pages of a book and hear such intelligence as recorded on a recording medium. The motor drive means operating the page turning arm is responsive to signals on the recording medium through control circuit means to cause the arm to rotate through an arcuate path carrying an individual page, to turn the page over and to return to its original position ready to carry over the next page. The signals on the recording medium are placed at predetermined positions on the medium to coincide with the intelligence printed on the pages so that upon complete reproducing of sonant stored intelligence for any one page, the page is turned over by the page turning arm.

3,808,721
ANIMATED DISPLAY APPARATUS
William R. Gersch, Flocktown Rd., Long Valley, N.J.
Filed Nov. 17, 1972, Ser. No. 307,471
Int. Cl. G09f *11/02*
U.S. Cl. 40—106.52 **4 Claims**



Apparatus for producing moving light patterns of varying size and intensity in which a plurality of electric lamps are mounted in vertically spaced relation along a rotatable vertical shaft driven by a motor, the lamps being spaced at different distances from the axis of the shaft and being surrounded by four translucent screens on which the patterns are projected. The screens are spaced from the lamps and intermediate the screens and the lamps and spaced therefrom is a cylindrical, tubular mask having its axis parallel to the shaft axis and having a plurality of light transmitting areas bordered by opaque areas, the light transmitting areas defining the light transmitted from the lamps to the screens.

3,808,722
PUNCH-OUT FILM MOUNT
Donald W. Byers, Portland; Chester H. Petry, Jr.; Carl G. Nordstrom, both of Newberg, and James Carl Hensley, Portland, all of Oreg., assignors to Byers Photo Equipment Company, Portland, Oreg.
Filed July 13, 1973, Ser. No. 378,949
Int. Cl. G09f *1/12*
U.S. Cl. 40—152 **10 Claims**



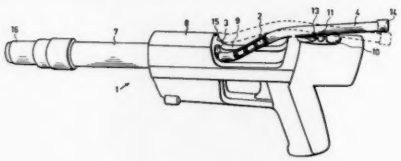
A film mount for mounting film in the production of projectible slides has a central punch-out section incorporating the film, thereby providing a slide assembly having at the election of the operator an enlarged mount dimensioned for use in a projector of a first class, or a mount of reduced dimensions sized for use in a projector of a second class.

3,808,723

CARTRIDGE MAGAZINE FOR POWER TOOLS

Karl Erich Samuel Erixon, Huskvarna, Sweden, assignor to Gunnebo Bruks Aktiebolag, Gunnebobruk, Sweden

Filed Dec. 29, 1972, Ser. No. 319,395
Claims priority, application Sweden, Apr. 4, 1972, 4292/72
Int. Cl. F41c 25/00
U.S. Cl. 42—6 11 Claims



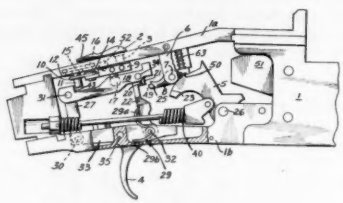
A cartridge magazine for power tools by virtue of which the loading of the tool with a cartridge is semi-automated and a great number of such cartridges are stored in this magazine in readiness for a rapid reloading of the tool. The cartridges are contained behind one another in a channel and the part constituting the channel is tiltable between two end positions, in one of which the channel communicates with a cartridge chamber in the inner end of the barrel of the tool.

3,808,724

FIRING MECHANISM FOR FIREARMS

John P. Linde, Ilion, N.Y., assignor to Remington Arms Company, Inc., Bridgeport, Conn.

Continuation-in-part of Ser. No. 148,825, June 1, 1971, abandoned. This application Feb. 2, 1973, Ser. No. 329,218
Int. Cl. F41c 19/00
U.S. Cl. 42—42 R 10 Claims



An automatically selective firing mechanism for use in a double-barrelled firearm of the type having a single trigger. The system contains a double sear, double hammer firing arrangement.

The firing mechanism automatically arms the unfired sear after the first sear has dropped. This secondary arming takes place by releasing the trigger. The mechanism is free of any tendency toward accidental double firing, often referred to as "doubling." This is accomplished without the use of separate mechanical restraining mechanisms or inertial weights.

This invention is so constructed that a sudden jarring shock, such as that experienced in the dropping of the firearm, will not tend to discharge the gun.

In addition, the sears and hammers are arranged to provide an extremely fast lock time.

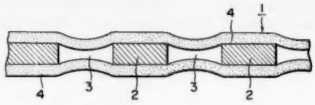
Selection of the barrel to be fired, and the release of the safety is accomplished in one easy flip of the selector lever. The lever is so positioned upon the top tang of the firearm to afford ease and comfort of barrel selection to both right and left-handed shooters.

3,808,725

FISHING NET HAVING A LARGE SPECIFIC GRAVITY

Akio Matsumoto, and Kenji Someno, both of Tokyo, Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Filed Aug. 2, 1972, Ser. No. 277,375
Claims priority, application Japan, Aug. 3, 1971, 46-57947
Int. Cl. A01k 73/00
U.S. Cl. 43—7 8 Claims



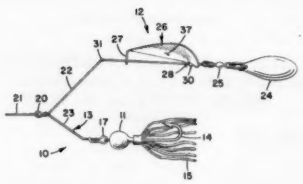
A fishing net having a high specific gravity prepared by netting monofilaments of a hollow thermoplastic synthetic resin sheath containing spaced-apart fiber segments of a metal or a metal alloy. The segments have a high specific gravity, such as in lead or lead alloys, and are enclosed therein as the core, or twines of such monofilaments. Voids are located within the sheath between adjacent ends of the segments. The net may also comprise compound twines consisting of the foregoing monofilaments and monofilaments of natural or chemical fibers.

3,808,726

SPINNER LURE RIG

Lindley E. Flanagan, Jr., 5700 Rockhill Rd., Fort Worth, Tex.

Filed July 24, 1972, Ser. No. 274,431
Int. Cl. A01k 91/00
U.S. Cl. 43—42.13 6 Claims



A spinner lure rig includes both a sub-surface lure portion and a hydrofoil structure which, in use, rides on the surface of the water in hydroplane fashion for supporting the rig in the water. A yoke is connected between the sub-surface lure and the hydrofoil structure for positioning the lure at a predetermined depth beneath the water surface when the hydrofoil structure is on the surface. Alternatively, the rig may be worked below the water surface. In a preferred embodiment, the hydrofoil structure is configured with dihedral, hydrofoil wing portions which enhance the stability of the hydrofoil during forward movement. The preferred embodiment of the rig is also configured with at least most of the area of the hydrofoil located to the rear of the center of gravity of the entire rig, whereby the rig is adopted to glide forwardly through the water when permitted to sink.

3,808,727

ADJUSTABLE SELF-REGULATING TROLLING DEVICE

Robert D. Flanders, Rt. 2, Box 666, No. 42, Wilsonville, Oreg.

Filed Aug. 21, 1972, Ser. No. 282,588
Int. Cl. A01k 95/00
U.S. Cl. 43—43.13 11 Claims

An adjustable self-regulating trolling device for maintaining a fishing lure or bait at a constant predetermined depth with respect to the surface of a body of water being fished. The device comprises a flat, laterally extending plate having a vari-

able, multi-positional weight assembly attached to the front of the plate. A fin, having a tow line retainer bar attached at its upper end and a rudder-like lower portion, is pivotally mounted within the plate and is spring-biased for limited arcuate movement in a vertical path with respect to the plate. By setting certain structural adjustments incorporated within the design of the mechanism, which include a slideable stop in abutting communication with the retainer bar and interchangeable springs of varying tension interconnectable

between the plate and any one of a number of slits formed on the fin, the desired proportional relationship between the angle and distance of descent of the device respectively can be achieved, and the depth to which the structure will dive before it reaches a constant planing position in the water can be predetermined. Additionally, the device is self-regulating and is therefore designed for automatic resetting to its predetermined constant planing position upon displacement therefrom.

3,808,728

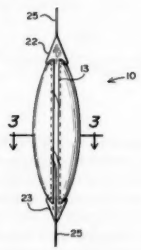
ATTACHMENTS FOR FISHING LINES

Wilfred L. Ratte, Jr., White Bear Lake, Minn., assignor to Water Gremlin Company, White Bear Lake, Minn.

Continuation-in-part of Ser. No. 282,260, Aug. 28, 1972, abandoned. This application Jan. 8, 1973, Ser. No. 321,865

Int. Cl. A01k *95/00*

U.S. Cl. 43—44.91 **16 Claims**



An attachment for a fishing line is provided which comprises a flexible elastic core for insertion into a fishing line body. The flexible core contains a slot located longitudinally therein for receiving a fishing line and a pair of ends which can be grasped in one's hand to twist the core around the line to firmly grasp the line as well as to cushion the line and prevent undue wear of the line. The core ends comprise converging sections which are large enough for grasping as well as small enough to make the body and core weedless.

3,808,729

ANIMAL TRAP

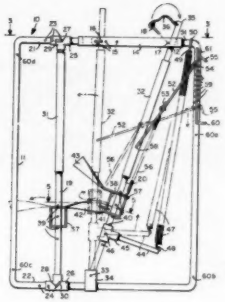
John W. Gilbaugh, 19396 Monte Vista Dr., Saratoga, Calif.

Filed Sept. 12, 1972, Ser. No. 288,422

Int. Cl. A01m *23/24;* **A61d** *3/00*

U.S. Cl. 43—88 **7 Claims**

An animal trap made in the form of a rigid frame equipped with two padded bars for capturing animals without injury by the neck. One padded bar is secured to the top and bottom of frame. An end of the other padded bar is hinged to the bottom member of the frame with the remaining end retained in an elongated opening at top of frame to keep it aligned with other padded bar as the trap is set and sprung. Near their lower extremities the padded bars are equipped with trigger mechanism parts which work in cooperation to hold trap in set position and to spring the set when trigger is activated. The



hinged, padded bar is equipped with a locking device to hold it firmly against neck of captured animal to prevent escape. An elongated guide opening is provided with means to adjust space between padded bars to control pressure of hinged bar against necks of animals of varying sizes.

ERRATUM

For Class 43—4 see:
Patent No. 3,808,731

3,808,730

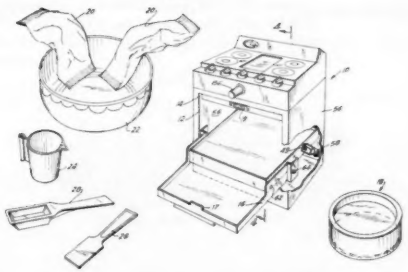
TOY OVEN

Julius Cooper, New Hyde Park, and Harvey Berkin, Merrick, both of N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.

Filed Feb. 8, 1973, Ser. No. 330,527

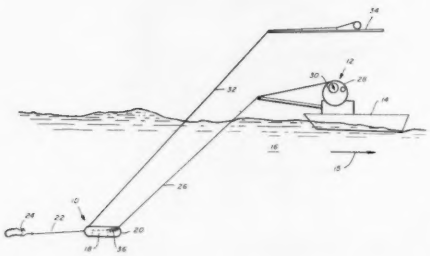
Int. Cl. A63h *33/00*

U.S. Cl. 46—1 R **19 Claims**



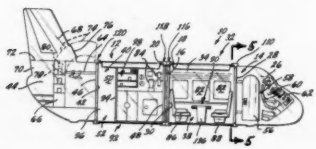
A toy oven and a telescopic food mold are provided for use in reconstituting a compressible food product thereby to simulate baking of a cake or the like. The toy oven has an oven cavity defined between a fixed upper wall and a lower wall which is adapted to be moved towards the upper wall upon closing of the oven door. The compressible telescopic mold is first filled with a compressible food product and then seated on the lower movable wall of the oven cavity. When the oven door is closed the telescopic mold is compressed between the upper and lower oven walls, thereby compressing the mold and thus compressing and reconstituting the food product contained therein.

3,808,731
AUTOMATIC DOWN RIGGER
Darrell J. Lowrance, Tulsa, Okla., assignor to Lowrance Electronics, Inc., Tulsa, Okla.
Filed Jan. 15, 1973, Ser. No. 323,450
Int. Cl. A01k 31/06
U.S. Cl. 43—4 6 Claims



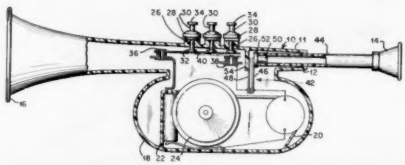
In trolling a lake for fish it is desirable to troll at a depth where the temperature is ideal for the species of fish being sought. This abstract describes an apparatus in which a temperature sensor is carried in a probe attached to a cable depending from a motor driven reel carried by the trolling boat. The temperature sensor is a thermo-resistive element which is connected to a servo amplifier which controls the direction of rotation of the reel, so that the probe cable can be lengthened to permit the probe to go to a greater depth or can be shortened to bring the probe to a shallower depth, so as to adjust the position of the probe to water of the desired temperature.

3,808,732
PORTABLE DISPLAY TOY
Derek J. Gay, Palos Verdes Peninsula; William H. Smedley, Bel Aire; Aaron G. Cohen, Los Angeles; Darryl R. Dworkin, Torrance; Michael W. Nuttall, South Pasadena, and Nicol S. Wilson, Redondo Beach, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Mar. 5, 1973, Ser. No. 337,962
Int. Cl. A63h 33/06
U.S. Cl. 46—12 7 Claims



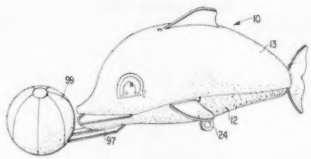
Two box-like portions hinged together to simulate a flight bag and having (1) simulated airplane seats, table and galley secured to the inner face of each portion, (2) a two-dimensional, simulated airplane tail hinged to one portion and (3) a two-dimensional airplane nose hinged to the other portion, whereby the simulated flight bag may be spread open to represent a complete airplane in longitudinal cross-section so that a child-user may place dolls and other toys in the simulated galley and in positions at the table. For storage, the simulated airplane tail and nose are folded into the inside of the box-like portions which may then be folded together, closed with suitable fasteners and carried by a handle, just as a flight bag is carried.

3,808,733
TOY WIND INSTRUMENT HAVING SIMULATED VALVE CONTROLS FORMING SWITCH BUTTONS
William J. Pipa, New Hyde Park, N.Y., assignor to Dicker International, Inc., New York, N.Y.
Filed Aug. 11, 1972, Ser. No. 280,050
Int. Cl. A63h 5/00
U.S. Cl. 46—44 6 Claims



A toy simulating a musical wind instrument of the type having a multiplicity of finger operated pitch valve control means, in the body of which a battery-operated toy phonograph is housed. The circuit of the toy phonograph includes a normally open switch which is closed by any one of the multiplicty of finger operated simulated pich valve control means.

3,808,734
TOY DOLPHIN
Haruo Suzuki, Chiba, Japan, assignor to Toytown Corporation, Tokyo, Japan
Filed June 26, 1973, Ser. No. 373,794
Int. Cl. A63h 23/00
U.S. Cl. 46—91 5 Claims

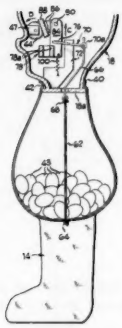


A toy dolphin provided with a buoyant body for floating in water, a motor and a source of energy for same located within the body, a flipper operatively mounted for movement at the rearward end of the body, a buoyant member operatively mounted to the forward end of the body of the dolphin for rotation between a first position wherein the buoyant member is generally aligned with the buoyant body of the dolphin and a second position wherein the buoyant member is spaced downwardly from the dolphin body, a sound producing mechanism within the body, a gear train connecting the motor and the propelling means for running same continuously, a gear train operatively connecting the motor, the buoyant member and the sound producing mechanism for operating same intermittently during the continuous operation of the flipper such that as the buoyant member rotates to its second position, the forward end of the buoyant body of the dolphin is raised upwardly from the water while the rearward end thereof is further submerged at which time the sound producing mechanism operates.

3,808,735
MOVABLE FIGURE TOY
Howard J. Morrison, Deerfield, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.
Filed Nov. 6, 1972, Ser. No. 304,062
Int. Cl. A63h 11/00
U.S. Cl. 46—135 R 11 Claims

A doll or figure toy which changes facial expressions as it is moved between a seated position and an erect position, by

means of gravity operation from the weight of the torso portion of the doll which shifts longitudinally in response to changing of the doll's positions. The doll's torso is operatively



connected to facial expression components movably mounted on the doll's head for movement in response to shifting of the torso.

3,808,736

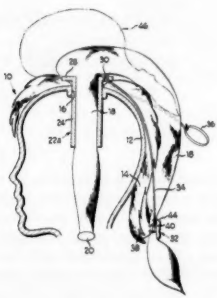
HAIR STYLING FIGURE AND ACCESSORIES

Rouben T. Terzian; Marvin I. Glass, both of Chicago, and Robert S. McKay, Morton Grove, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 15, 1973, Ser. No. 323,703

Int. Cl. A63h *11/00*

U.S. Cl. 46—135 **14 Claims**



A hair styling figure, and accessories therefor, which includes a simulated head having a skull portion with hair imbedded therein or fixed thereto. The skull portion has a generally centrally located aperture in the top thereof through which a tuft of simulated hair protrudes and within which one of a plurality of interchangeable accessory pieces may be removably received. The accessory pieces when received in the skull aperture have outwardly protruding portions which facilitate styling the hair for curling, braiding or other styling arrangements. Once the hair is set by utilizing one of the hair styling accessory pieces, the particular accessory piece may be removed, if desired, and the hair combed out or otherwise arranged.

3,808,737

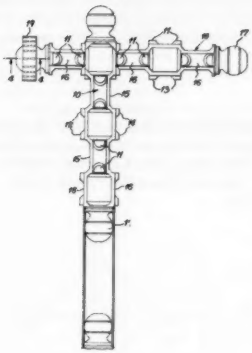
RING ACCESSORY FOR AN EDUCATIONAL DEVICE

Andrew M. Abrams, Scarborough, N.Y., assignor to Union Camp Corporation, Wayne, N.J.

Filed Sept. 1, 1972, Ser. No. 285,586

Int. Cl. A63h *17/26*

U.S. Cl. 46—221 **1 Claim**



An accessory for an educational device in the form of logs which can be stacked and formed into various configurations allowing students to learn to interpret and solve mechanical problems as well as improve muscle control and coordination. The accessory is in the form of a ring and is adapted to interconnect with or support the logs to permit movement of the stacked logs and also to serve as an ornament for certain configurations of logs, all of which expands the scope of activity of the device. Such accessory can also serve as a support to permit movement of other structures.

3,808,738

MEANS FOR PERFORMING GEAR CHANGES IN MULTI-RATIO CHANGE-SPEED GEAR BOXES

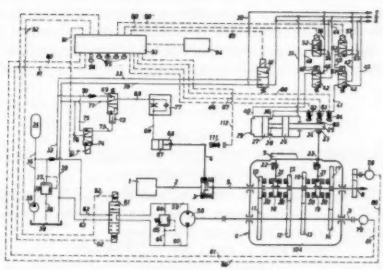
Gunter Siebers, Dahlmannstr. 32, 85 Nurnberg; Karl Prenzel, Chemnitzerstr. 27a, 8541 Neu-Katzwang, and Hans Barthel, Bothmerstr. 16, 85 Nurnberg, all of Germany

Filed June 15, 1970, Ser. No. 46,555

Claims priority, application Germany, June 13, 1970, 1930046

Int. Cl. F16h *3/20*

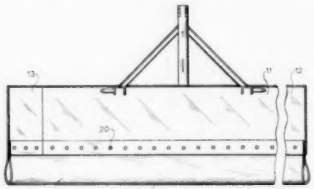
U.S. Cl. 74—339 **2 Claims**



A hydraulic gear-changing apparatus having a gear-box having driven members, driving members and members to be

moved to selectively engage a driven member and a driving member is provided with a hydraulic assembly for changing the speed of the driving member prior to engagement with the member to be moved, the hydraulic system comprising a pump, an electromagnetically operated three position four-way valve and means for fluid connection of the pump to the four-way valve, a fluid source and a fluid return sump including a by-pass between the fluid source and fluid return sump, the hydaulic assembly braking the driving member, driving the driving member or operating without effect on the speed of the driving member depending upon the position of the four-way valve.

3,808,739
GOLF COURSE WATER COLLECTOR APPARATUS
Jack S. Newgent, 701 Roberts St., Kissimmee, Fla.
Filed May 3, 1973, Ser. No. 356,790
Int. Cl. A01c *23/00*; A46b *15/00*
U.S. Cl. 47—1.5 **6 Claims**



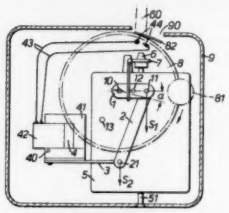
An apparatus for collecting standing water on a golf course and spreading the water over a larger area of the golf course thereby allowing the use of the course following heavy rains. An elongated frame has a three-point hitch for connection to a golf course tractor and has a rolled rubber flap water collector for pulling across the turf which collects the water in the front of the frame and flap and distributes it over the golf course.

3,808,740
COATED SEEDS AND METHODS
Frederic E. Porter, Minneapolis, and Howard E. Kaerwer, Jr., Eden Prairie, both of Minn., assignors to Northrup, King & Co., Minneapolis, Minn.
Filed Jan. 8, 1973, Ser. No. 321,679
Int. Cl. A01c *1/06*
U.S. Cl. 47—58 **16 Claims**

Plant seeds, preferably leguminous, are coated with 0.1–5 parts by weight, per 100 parts by weight of seed, of a film forming material and further coated with at least 10 parts by weight (same basis) of solid particles of an agent such as calcium carbonate while the first coat is semi-solid and tacky. The film-forming material preferably comprises a prepolymer curable with water and/or an amine to a water insensitive but permeable solid. One particularly suitable agricultural use for the resulting coated seeds is in the growing of crops in acid soils.

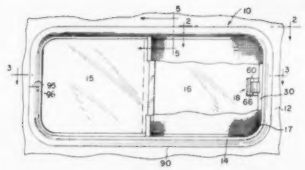
3,808,741
OPERATING MEANS FOR ELECTRO-MECHANICALLY IGNITED LIGHTERS
Claus Christian Cobarg, Steinbach, and Hans Schindler, Egelsbach, both of Germany, assignors to Braun Aktiengesellschaft, Frankfurt/Main, Germany
Filed Feb. 6, 1973, Ser. No. 330,049
Int. Cl. F23q *2/28*
U.S. Cl. 431—256 **8 Claims**

Operating means of an electro-mechanically ignited lighter, particularly a gas lighter, comprises a mechanical energy store connected to the ignition mechanism and to a manually operated crank mechanism. The crank mechanism includes a rotatable element, such as a disc, and turning of the rotatable



element results in the transmission of energy to the energy store until the energy stored up therein is sufficient to operate the ignition mechanism.

3,808,742
WINDOW
Yale W. Ehret, and Russell O. Anderson, both of Elkhart, Ind., assignors to The Adams & Westlake Company, Elkhart, Ind.
Filed Sept. 20, 1972, Ser. No. 290,707
Int. Cl. E05d *15/06*
U.S. Cl. 49—413 **12 Claims**



A window construction which is adapted to be mounted in an opening in a wall of a recreational vehicle or the like, and which comprises, in the form shown in the drawings, a generally oblong frame of extruded metal with parallel glazing channels for receiving a fixed glass panel member and a co-operating sliding glass panel member together with a sliding screen member for the opening when the sliding glass panel member is moved to an open position. The frame has a peripheral flange for securing to the outside face of the wall, with a fastener concealing strip, and an inside trim member is provided which adapts the frame for mounting in different thickness walls. The screen member which rides in an inner channel in the frame is held in its channel and readily removable. The sliding glass panel member which rides in the outermost channel in the frame is readily removable by first removing a section of a guide track in the channel in which it is normally seated. The fixed glass panel member has three of its marginal edges normally held in an intermediate channel by a removable wedge-type glazing strip. When the arrangement comprises a fixed glass panel member flanked by sliding panel members on each side thereof the fixed panel member will have two of its marginal edges held in an intermediate channel by a removable wedge-type glazing strip.

3,808,743

VEHICLE DOOR, ESPECIALLY FOR PASSENGER MOTOR VEHICLES

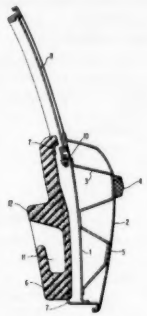
Hermann Renner, Magstadt, and Bruno Sacco, Sindelfingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Continuation of Ser. No. 810,504, March 26, 1969, abandoned. This application May 30, 1972, Ser. No. 257,963

Claims priority, application Germany, Apr. 30, 1969, 810504

Int. Cl. B60j 5/04, 1/16; E05f 11/38

U.S. Cl. 49—502 14 Claims



A vehicle door, especially for passenger motor vehicles in which reinforcing profiles are provided between the inner and outer sheet metal panels of the door while the lowerable window including its guide and actuating means are arranged within the space formed between the inner sheet metal panel of the door and a cover panel covering the inner sheet metal panel.

3,808,744

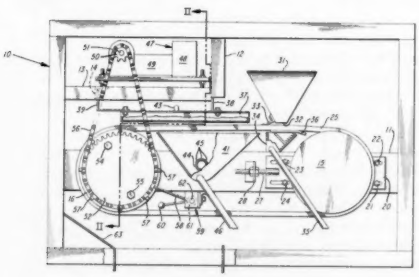
METHOD AND APPARATUS FOR MANUFACTURE OF SOLID ABRASIVE CHIPS

Gunther W. Balz, Kalamazoo, and Forrest P. Leipold, Portage, both of Mich., assignors to Roto-Finish Company, Kalamazoo, Mich.

Filed Sept. 13, 1971, Ser. No. 179,816

Int. Cl. B24b 7/00, 9/00, 31/00

U.S. Cl. 51—3 4 Claims



Solid abrasive chips are continuously manufactured by providing an endless belt with indentations therein in the form of a desired chip, filling the indentations with a fluid abrasive admixture, contacting the filled indentations with a cooling fluid so as to solidify the admixture, and thereafter removing the solidified chip. A machine for the foregoing manufacture comprises an endless belt with indentations stretched over two rotatable drums one of which is driven, a dispenser means situated above the belt and adapted to fill the indentations with a fluid abrasive admixture, and chilling means adapted to solidify the admixture within the indentations.

3,808,745

MACHINE TOOL FOR HEAVY COUNTER-BALANCED CRANKSHAFTS

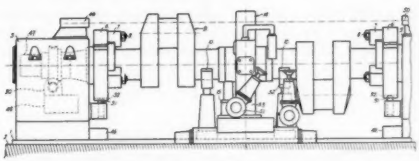
Bohuslav Belohoubek, and Josef Linda, both of Praha, Czechoslovakia, assignors to Tos Hostivar, Narodni Podnik, Praha-Hostivar, Czechoslovakia

Filed Jan. 3, 1972, Ser. No. 214,561

Claims priority, application Czechoslovakia, Jan. 4, 1971, 28-71

Int. Cl. B24b 25/00, 27/00, 7/00

U.S. Cl. 51—3 3 Claims



A machine tool for heavy counter-balanced crankshafts having a rear bed and front bed with two rotating working headstocks for stationarily supporting a worked counter-balanced crankshaft. The headstocks are located at opposite sides of the rear bed. At least one supporting grinder rest is placed between the working headstocks. The front bed is adjacent to the rear bed and longitudinally movable bed slides are located on both sides. A carrying saddle is placed upon the slides and a guiding circular body is mounted on the carrying saddle. A rotary carrying body is pivotally mounted within the guiding circular body, and is provided with its own drive means for circular movement within said guiding circular body. An adjustable machining means is provided on the carrying body and in the guiding circular body and rotary carrying body are provided with openings positioned on the side to the worked crankshafts. The openings enable, when coincidently set on both the bodies, a working member consisting of guiding circular body and rotary carrying with working tool to be placed on the worked heavy counter-balanced crankshaft.

3,808,746

APPARATUS FOR GRINDING OF KNIVES IN PARTICULAR OF A HAND-KNIFE AND CUTTER-KNIFE

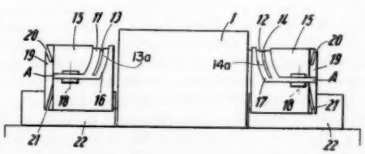
Fritz Knecht, Vogt/Heissen, Germany, assignor to Tecmed A.G., St. Margrethen, Switzerland

Filed Sept. 14, 1971, Ser. No. 180,306

Claims priority, application Germany, Aug. 13, 1971, 2140596

Int. Cl. B24b 3/54

U.S. Cl. 51—128 4 Claims



An apparatus for grinding of knives, particularly of hand-knives and cutter-knives, which comprises rotatable grinding

discs having side faces adapted to have the cutting edge of knives press against the side faces. A non-rotatable protection housing includes a central drive member, and the grinding discs are disposed opposite each other from said central drive member. The protection housing has insertion slots for a knife blade, which slots form cuts of the protection housing. The cuts are disposed in a plane extending obliquely to the axis of the grinding discs, the oblique position determining the grinding angle.

3,808,747

MECHANICAL FINISHING AND MEDIA THEREFOR

William L. Kenagy, Huntingdon Valley, Pa., assignor to The Wheelabrator Corporation, Mishawaka, Ind.

Continuation of Ser. No. 44,475, June 8, 1970. This application May 24, 1972, Ser. No. 256,598

Int. Cl. B24b *31/14*

U.S. Cl. 51—164.5 **2 Claims**

This invention is addressed to mechanical finishing and media therefor wherein the finishing media are formed of geometric shapes of bauxite particles which have been sintered at a temperature within the range of 2,900°–3,100° F.

3,808,748

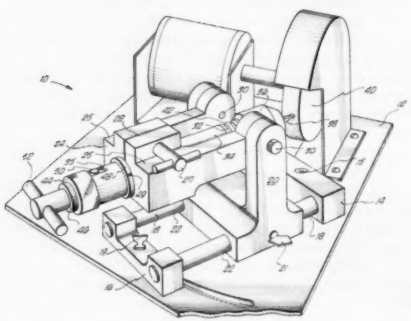
ADJUSTABLE MOUNTING BRACKET FOR WORKPIECE

Carl L. Gunnerson, Buena Park, Calif., assignor to The Zealot Corporation, Las Vegas, Nev.

Filed May 8, 1972, Ser. No. 251,460

Int. Cl. B24b *3/30*

U.S. Cl. 51—219 R **6 Claims**



A mounting bracket assembly that is capable of being pivotally mounted to a base plate adjacent a machining operation such as a grinding wheel. A pair of guide bars permit a relative positioning of a vertical support member which carries the workpiece. A U shape bracket member is pivotally mounted on the vertical support with the pivot point being positioned above the axis of the workpiece in the vertical support thereby permitting the workpiece to be moved into the grinding wheel by rotation about the pivot point. A spring biased shaft carries at one end a collet for holding the workpiece and at the other end an indexing means for permitting a selective rotation of the workpiece for progressive machining operations. A sleeve surrounds the shaft and is fixedly positioned by the U shape bracket to serve as an adjustable mounting seat for the spring. The spring serves the function of biasing the indexing operation while also permitting both a fine adjustment and a safety factor to prevent the workpiece from jamming during the machining operation.

3,808,749

SAFETY GUARDS FOR GRINDING WHEELS

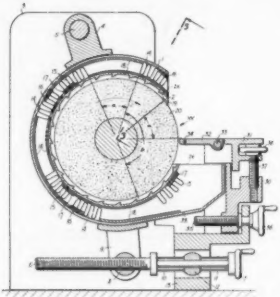
Frantisek Rosberg; Josef Linda; Ondrej Buzga; Miloslav Dusek, all of Praha, and Jiri Cvetler, Sazavou, all of Czechoslovakia, assignors to Tos Hostivar, narodni podnik, Praha, Czechoslovakia

Filed July 5, 1972, Ser. No. 269,018

Claims priority, application Czechoslovakia, July 6, 1971, 4951-71; June 5, 1972, 3866-72

Int. Cl. B24b *55/04*

U.S. Cl. 51—269 **9 Claims**



A safety guard for grinding wheels comprising a solid outer shield provided upon its inner periphery with resiliently deformable segments and an inner shield adapted to close over the grinding wheel provided upon its outer periphery also with resiliently deformable segments. The inner closing shield is rotatably seated within the solid outer shield and the deformable segments and are arranged alternatively, one by one, in pairs to provide slidable supports for maintaining the shields in radial spaced relationship.

3,808,750

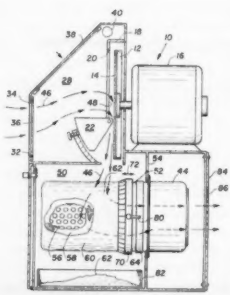
DENTAL MODEL TRIMMER

Douglas M. Mann, 245 E. 63rd St., New York, N.Y.

Filed Oct. 10, 1972, Ser. No. 296,030

Int. Cl. B24b *55/06*

U.S. Cl. 51—273 **1 Claim**



A trimmer for dental models made of plaster or similar material, said trimmer being a self-contained, portable unit

having a vacuum system to remove the dust of the trimmed material, said vacuum system including a filter, in bag form, supported within a scraping ring such that there is a comparatively large usable filtering surface. This surface is also readily scraped and thereby maintained effective. For both these and other reasons, the within trimmer requires minimum maintenance during prolonged intervals of use.

3,808,751

METHOD OF MAKING A SANDBLAST MASK

Setsuo Usui, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 18, 1972, Ser. No. 227,444

Claims priority, application Japan, Feb. 20, 1971, 46-8230

Int. Cl. E06b *7/20*

U.S. Cl. 51—312 **8 Claims**

A method of making a sandblast mask from a photopolymer layer including the step of forming a colored filter layer between the photopolymer layer and the workpiece to prevent light reflected from the workpiece from exposing the photopolymer layer.

3,808,752

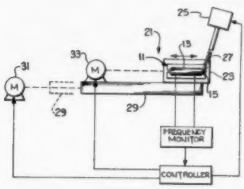
METHOD OF AUTOMATICALLY ADJUSTING THE FREQUENCY OF CRYSTAL RESONATORS

William D. Beaver, Mission Viejo, and Herbert O. Lewis, Westminster, both of Calif., assignors to Comtec Economation, Santa Ana, Calif.

Filed July 10, 1972, Ser. No. 270,051

Int. Cl. B24f *1/00*

U.S. Cl. 51—319 **13 Claims**



A method of tuning a mechanical resonator comprising reducing a dimension of the resonator to thereby change its resonant frequency, measuring the resonant frequency of the resonator while said dimension is being reduced, and controlling the dimension reduction in accordance with the frequency measurement to thereby provide the resonator with the desired resonant frequency.

3,808,753

ROTARY ABRASIVE TOOL AND COATED ABRASIVE DISC AND BACKING ASSEMBLY THEREFOR

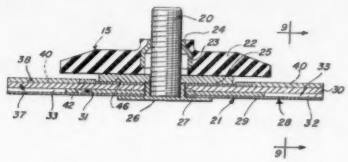
Armand C. Maran, 1745 Lisa Marie Ct., Deerfield, Ill.

Filed Nov. 16, 1972, Ser. No. 307,009

Int. Cl. B24d *17/00*

U.S. Cl. 51—358 **10 Claims**

A rotary abrasive tool and a flexible coated adhesive disc and backing assembly therefor. The flexible coated abrasive disc is mounted in the assembly outwardly of a slotted flexible backing disc or pad member which is provided with radially arranged circumferentially spaced slots which extend only partially through the body of the slotted flexible backing disc in the outer peripheral or marginal portion thereof. The slotted, flexible backing disc or pad member is adhesively attached to a second solid or unslotted backing disc or pad member. In one form of the invention, a second slotted backing disc or pad member, similar to the first slotted backing disc or pad member, is attached to the solid unslotted backing disc at the rear thereof, and the radially arranged slots in the two flexible slotted backing discs or pad members are staggered circumferentially relative to each other. In another form of the invention only a single slotted flexible backing disc is provided between the flexible coated abrasive disc and the solid unslotted backing disc and holes are provided in the solid unslotted backing disc within and in registry with the slotted areas of the slotted flexible backing disc so that air will circulate through the radially arranged flexible slotted disc or pad member and the holes in the solid, unslotted backing disc as the coated abrasive disc and backing assembly therefor are rotated.



3,808,754

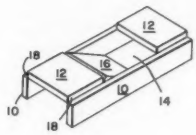
FOLDING CONTOURED WALL

Richard E. Bottjer, Orinda; Delp W. Johnson, San Carlos; William F. Poole, Ross, and James P. Storm, Menlo Park, all of Calif., assignors to Delp W. Johnson, Poole & Storm, Architects, San Francisco, Calif.

Filed Aug. 24, 1972, Ser. No. 283,600

Int. Cl. E04b *2/82, 1/344*

U.S. Cl. 52—70 **9 Claims**



A contoured or modeled wall section cast in the flat in the form of a plurality of concrete panels hinged to one another and suitably arranged so that when selected panels are lifted simultaneously, other panels fold down to a predetermined position where they are secured by bolts or other devices to adjacent panels. Typically, the wall section may be formed by two parallel, spaced-apart perpendicularly-directed inner or spandrel panels. One or more minor panels may be disposed in the central aperture thus formed, hinged to the inner panels. When the inner panels are lifted, the outer and minor panels fold downwardly and are bolted in place to form a contoured wall section. The outer panel members form columns or fins, the inner panels form spandrels and the minor panels provide bracing and may function as canopies or sun shades, window sills or other modeling.

3,808,755

INDUSTRIALISED BUILDING STRUCTURE

Frank Bouckley Bott, Oakengates, England, assignor to British Steel Corporation, London, England

Filed Mar. 29, 1972, Ser. No. 239,276

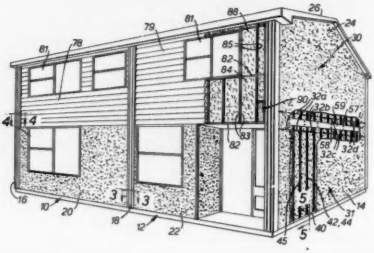
Claims priority, application Great Britain, Sept. 7, 1971, 41759/71

Int. Cl. E04b *7/04*; **E04h** *5/02*

U.S. Cl. 52—92 **12 Claims**

A building structure includes a wall comprising upper and lower wall sections (30,31) disposed edge-to-edge and parallel

one above the other; and a floor panel (49) connected to the wall adjacent the neighbouring edges of the wall sections by



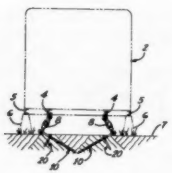
connector means (57,58) which pass at least partially through both the upper and lower wall sections thereby also securing the upper and lower wall sections together.

3,808,756

GROUND ANCHOR FOR MOBILE HOMES

Robert J. Cooper, 4906 W. Amelia, and Homer A. Dozier, 5519 W. Glenrosa, both of Phoenix, Ariz.

Filed Jan. 17, 1972, Ser. No. 218,306
Int. Cl. E02d *5/80*
U.S. Cl. 52—156 **2 Claims**



A ground anchor for securing mobile homes includes a planar portion and a U-shaped member interlocking the planar portion of the ground anchor to prevent movement thereof.

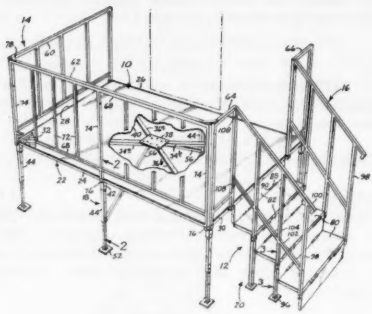
3,808,757

DISMANTLEABLE PORCH INSTALLATION

Gordon N. Greenwood, P.O. Box 1392, Pendleton, Oreg.

Filed Aug. 4, 1972, Ser. No. 278,004
Int. Cl. E04f *11/04;* **E04b** *1/343*
U.S. Cl. 52—184 **7 Claims**

A dismantleable porch installation including an elevated deck assembly and a step assembly leading from the ground to the deck assembly. The deck assembly includes a deck border frame made up of rigid frame elements set end-to-end in a course which extends about the perimeter of the deck assembly, and deck paneling seated on said border frame. Stake pockets secured to the border frame at points distributed about the perimeter of the deck assembly seat bottom ends of stake elements forming part of upstanding railing sections which bound the deck assembly in the porch installation. Legs support the deck paneling in an elevated position, which extend downwardly from the border frame and have upper ends seated in sockets presented on the under side of the border frame. The step assembly includes vertically disposed foot board frame sections interspersed with and joined to horizontally disposed tread frame sections. Sockets on forward margins of the tread frame sections receive upper extremities of legs supporting the step assembly. Stake pockets secured to



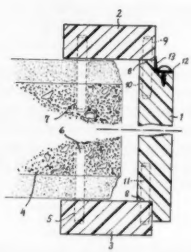
the foot board frame sections receive the bottom ends of stake elements forming part of side railing sections which bound the sides of the porch assembly.

3,808,758

FRAME FOR COVERING A WALL BREAK-THROUGH INTENDED TO RECEIVE A DOOR OR THE LIKE

August Burgers, am Bildchen 37, 5141 Gerderath, Germany

Filed Apr. 19, 1972, Ser. No. 245,515
Int. Cl. E06b *1/08*
U.S. Cl. 52—212 **4 Claims**



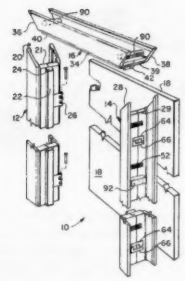
A frame for covering a wall break-through intended to receive a door or the like, which includes lining means and two facing members arranged substantially at a right angle to and at the two end faces of said lining means, and in which the two facing members are provided with dowel-shaped wall connecting members extending perpendicularly with regard to the plane of said facing members and connectable to those inner sides of the facing members which are not visible from the outside of the frame. The wall connecting members are adopted to be plugged into corresponding fitting wall recesses, at least one of the two facing members and the lining means having those surfaces thereof which face and contact each other provided with plug means including dowel-shaped connecting members and corresponding recesses for receiving said last mentioned members.

3,808,759

DOOR FRAME ASSEMBLY AND DOOR FRAME SECTION THEREOF

Eldon W. Carmichael, San Mateo, Calif., assignor to Doorcraft Inc., Burlingame, Calif.

Filed Aug. 14, 1972, Ser. No. 280,487
Int. Cl. E06b *1/04*
U.S. Cl. 52—212 18 Claims



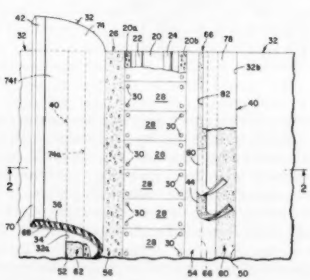
A prefabricatd door jamb assembly adapted for installation in a rough door opening, said assembly including a top or head frame arrangement and two side frame arrangements which are connected at corresponding ends to opposite ends of the top frame arrangement by fastenerless miter joints, the latter comprising cooperating groove and spline means. Each of the frame arrangements includes a pair of elongated sections which have L-shaped cross-sections and which have cooperating longitudinal edges adapted to engage against one another so that together the pair of elongated sections displays a U-shaped cross-section. The two sections of each frame arrangement are connected together for movement between a first position such that the aforestated longitudinal edges engage one another and a second position such that the longitudinal edges are spaced-apart and parallel. Novel shims or frame anchors are provided to act as a stabilizer between the door opening and the frame arrangements.

3,808,760

SURFACE COVERING INSTALLATION WITH MEANS TO REACH COVERED ACCESS SYSTEMS

Robert C. Ward, Bay Shore, N.Y., assignor to Commercial Affiliates, Inc., New York, N.Y.

Filed Mar. 20, 1973, Ser. No. 342,958
Int. Cl. E04b *5/48*; E04f *19/08*
U.S. Cl. 52—221 16 Claims



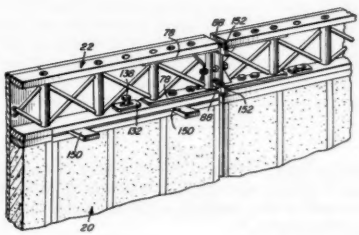
A surface covering installation such as a wall to wall floor covering of carpeting installed by means of the usual cementing operation and comprising a flap held in place by releasable pressure sensitive adhesive to provide access to covered access systems within the floor.

3,808,761

MODULAR BUILDING CONSTRUCTION

Peter L. Green; Gordon A. Lenfesty, both of Vancouver, British Columbia; Edmund H. Talbot, West Vancouver, British Columbia; Allen Joslin, and Vukasin Kovacevic, both of Vancouver, British Columbia, all of Canada, assignors to Imperial Modular Systems, Ltd., Vancouver, British Columbia, Canada

Filed Sept. 9, 1971, Ser. No. 179,050
Int. Cl. E04b *7/02*; E04h *12/00*
U.S. Cl. 52—300 7 Claims



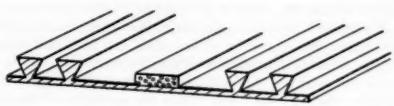
Modular construction utilizing prefabricated modular wall defining support panels in conjunction with overlying modular truss-like support beams which interconnect and allow a selective removal or reshuffling of the supporting panels while maintaining the structural integrity of the over-all construction.

3,808,762

WATERSTOPS

John Hurst, London, England, assignor to W. R. Grace & Co., Cambridge, Mass.

Division of Ser. No. 217,676, Jan. 13, 1972, Pat. No. 3,758,650, Continuation of Ser. No. 4,379, Jan. 20, 1970. This application Feb. 1, 1973, Ser. No. 328,994
Int. Cl. E04b *1/16*; E04f *15/14*
U.S. Cl. 52—403 3 Claims



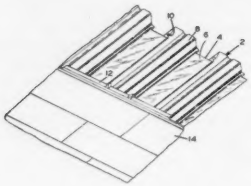
Novel external waterstops for use in sealing concrete joints which comprise a deformable section which forms a grout-tight seal with stop-end shuttering is positioned against the waterstop.

3,808,763

DIRECT ATTACHMENT OF ACOUSTICAL SUSPENSION RUNNERS TO METAL DECK ROOF

James C. Ollinger, and Kenneth L. Wasson, both of Lancaster, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Nov. 8, 1972, Ser. No. 304,756
Int. Cl. E04b 5/52
U.S. Cl. 52—481 5 Claims



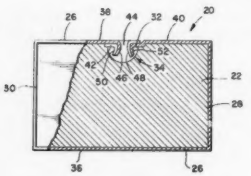
A conventional corrugated deck material is used with many roof structures. A hook structure is provided on a conventional suspension runner for a suspended ceiling system. This hook structure engages the flutes of the corrugated roof deck to hold the suspension runner in position. The suspended ceiling system is then fastened to the suspension runners.

3,808,764

REFRACTORY BRICK HAVING A METAL CASING

Clarence G. Norris, Parkville, and Woodrow W. Merrick, Upperco, both of Md., assignors to General Refractories Company, Philadelphia, Pa.

Division of Ser. No. 51,223, June 30, 1970, abandoned. This application July 3, 1972, Ser. No. 268,634
Int. Cl. E04c 1/12; F27d 1/06
U.S. Cl. 52—575 4 Claims



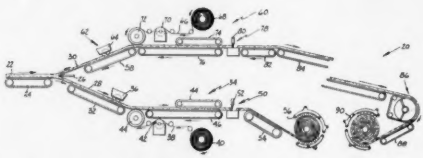
A furnace block comprising a refractory brick having a metal casing is provided. In the construction of the furnace block, overlapping ends of the metal plate are secured together at an elongated groove formed along one surface of the brick to provide a metal casing for the brick. One end of the metal plate has an offset which is received in the elongated groove. The overlapping ends of the metal plate are connected by puncturing or welding to lock the overlapping ends together and to secure the metal plate to the brick. A method of applying a metal plate to a refractory brick is also provided. In this method, the brick is positioned on one surface of the metal plate at a position intermediate between the ends of the metal plate, and the ends of the plate are bent into contact with the sides of the brick by using the brick as a male die. During the bending, the metal plate is held firmly against the bottom surface of the brick. Then the portions of the metal plate which extend above the top surface of the brick are bent into contact with the top surface to overlap the ends of the metal plate while holding the previously bent portions of the metal plate firmly against the sides of the brick. Finally, the overlapping ends of the metal plate are secured together to provide a metal casing for the brick. An apparatus for producing the metal encased bricks is also provided.

3,808,765

INVERTING AND REVERSING CONVEYOR

James Ludwig Wahlers, Littleton, Colo.; Rupert Douglas Terry, Toledo, Ohio; William Scott, Jr., Littleton, Colo., and Charles Donald Simmers, Bowling Green, Ohio, assignors to Johns-Manville Corporation, Greenwood Village, Colo.

Filed Feb. 27, 1973, Ser. No. 336,281
Int. Cl. B65b 63/04
U.S. Cl. 53—21 FW 7 Claims



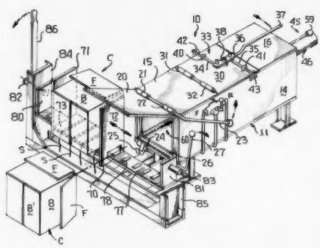
In a production line where strips of material are traveling in the same direction at two different levels, a packaging station is provided which has a common packing area for the strips of material on both levels. The strips of material on the lower level are conveyed directly into the packing station. The strips of material on the upper level are conveyed past the packing station. Once past the packing station, the strips of material on the upper level are guided through an arcuate or semi-circular path which both reverses the direction of travel of the strips and inverts the strips. After their reversal and inversion the strips are introduced into the packing station at a common level with the strips introduced into the packing station from the lower level.

3,808,766

MACHINE FOR COMPACTING AND PACKAGING WASTE MATERIAL

Royal Edward Hutchinson, 40 McKay Rd., and George Brebber Bruce, c/o Angus Toulin, Box 11, R.R. No. 4, both of Dundas, Ontario, England

Filed Oct. 6, 1972, Ser. No. 295,714
Int. Cl. B65b 1/24
U.S. Cl. 53—24 14 Claims



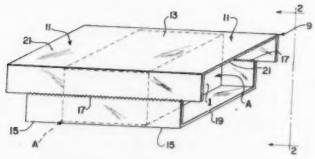
This disclosure relates to a machine for compacting and packaging waste material including a compaction chamber internally of a housing adapted to receive a container into which the waste material is to be compacted, a compacting ram, means for reciprocating the compacting ram in a first direction to compact the waste material and also discharge the container and in an opposite direction to condition the housing for the receipt of another charge of waste material, support means externally of a door of the housing upon which the discharged container is deposited for further processing, and means for moving the support means to displace the container for further processing while another container is charged in the compacting machine.

3,808,767

METHODS OF AND APPARATUS FOR SHRINK PACKAGING

Laurie M. Reid, Birmingham, Ala., assignor to Master Packaging Equipment, Inc., Trussville, Ala.

Continuation-in-part of Ser. No. 105,318, Jan. 11, 1971, abandoned. This application Aug. 16, 1972, Ser. No. 281,153
Int. Cl. B65b 51/20, 53/06
U.S. Cl. 53—30 44 Claims



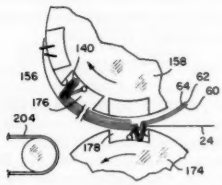
Methods of and apparatus for shrink packaging articles in a heat-sealable, heat-shrinkable plastic film wrapper, in which the wrapper is heated for heat-sealing and heat-shrinking purposes, and portions of the wrapper are folded as well as being heat-sealed by blowing heated air thereon.

3,808,768

METHOD AND APPARATUS FOR MANUFACTURING STUFFED AND SEALED MAILING PACKAGES

Wallace C. Dobbs, 33 W. 7th Ave., Runnemede, N.J.

Filed July 12, 1972, Ser. No. 270,919
Int. Cl. B65b 11/50
U.S. Cl. 53—31 24 Claims



A method and apparatus is herein described for manufacturing stuffed and sealed mailing envelopes wherein a printed continuous web is slit into continuous ribbons. A first ribbon is cut, trimmed, glued and folded to form a mailing envelope, a second ribbon may be cut, trimmed, glued and folded to form a return envelope and one or more additional ribbons may be cut, trimmed and folded to form the insertable sheets. The return envelope and inserts feed through the apparatus in synchronism and are folded, cut, trimmed and are otherwise treated in unison for marriage to the mailing envelope ribbon, in a partially folded condition. The combined package of return envelope, inserts and mailing envelope ribbon then feed together to cutter and tucker cylinders wherein the mailing envelope ribbon is cut and folded once and wherein a second fold is applied to all of the insertable material. The mailing envelope is then trimmed and the final fold is applied for envelope closing purposes.

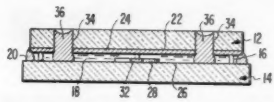
The envelope may be of the window envelope variety or may be a plain envelope for use in conjunction with an automatic addressing machine which is employed to label each package automatically following manufacture within the apparatus.

3,808,769

LIQUID CRYSTAL DEVICE CLOSURE METHOD

Arthur Noel Gardiner, and Herman Abraham Stern, both of Somerville, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sept. 5, 1972, Ser. No. 286,250
Int. Cl. B65b 7/28; B67b 1/04, 5/02
U.S. Cl. 53—43 10 Claims



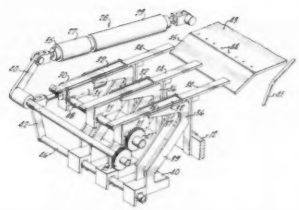
A method of closing a liquid crystal device after filling its substrate interspace with the liquid crystal material through a hole in one of the substrates, comprising introducing a particle of malleable, non-reactive material into the hole and then shaping the particle to conform with the peripheral surface of the hole. The particle may be made of a soft metal such as lead and shaped by forcing a swage thereagainst. The resultant plug hermetically seals the hole without increasing the thickness of the device.

3,808,770

CASING MACHINE AND METHOD

Joseph C. Berney, 15164 Goldenwest Cir., Westminster, Calif.

Filed June 29, 1972, Ser. No. 267,700
Int. Cl. B65b 7/20
U.S. Cl. 53—47 22 Claims



A device for folding the front and rear bottom flaps of a conventional carton after the open-ended carton has been placed around the contents. The direct support for the contents of the carton is transferred from the main platform to the front and rear bottom flaps without disturbing or dropping the orderly arrangement of the contents.

3,808,771

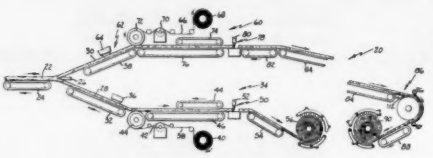
INVERTING AND REVERSING CONVEYOR

Charles L. Drella, Littleton; Carlo Fineo, Englewood; Lloyd W. Jenssen, and William Scott, Jr., both of Littleton, all of Colo., assignors to Johns-Manville Corporation, Greenwood Village, Colo.

Filed Feb. 27, 1973, Ser. No. 336,282
Int. Cl. B65b 63/04
U.S. Cl. 53—118 2 Claims

In a production line where strips of material are traveling in the same direction at two different levels, a packaging station is provided which has a common packing area for the strips of material on both levels. The strips of material on the lower level are conveyed directly into the packing station. The strips of material on the upper level are conveyed past the packing station. Once past the packing station, the strips of material on

the upper level are gripped between a drum and hugger belt and are guided through an arcuate or semi-circular path which both reverses the direction of travel of the strips and inverts



the strips. After their reversal and inversion the strips are introduced into the packing station at a common level with the strips introduced into the packing station from the lower level.

3,808,772

APPARATUS FOR FORMING AND FILLING CONTAINERS

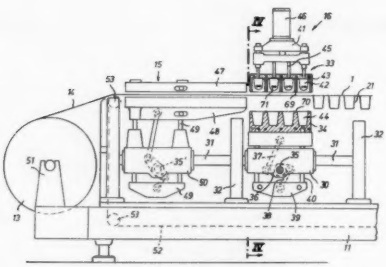
Alfons Turtschan, Schwalbisch Hall, Germany, assignor to Ganzhorn U. Stirn Kommanditgesellschaft, Schwabisch Hall, Germany

Filed Oct. 26, 1971, Ser. No. 192,216

Claims priority, application Germany, Oct. 27, 1970, 2052551

Int. Cl. B65b *47/02*

U.S. Cl. 53—141 **18 Claims**



A combined container making and filling machine, and associated process. Operating on a continuously moving web of thermoplastic material, the machine includes stations which heat the web, mold the web into connected containers, fill the connected containers, cover and seal the filled containers, and separate the containers, successively. The web is grasped at its edges and conveyed from a roll. Synchronizing drive means cyclically move the heating, container molding, and severing apparatus in the direction of web conveyance, and into engagement with the web. The filling nozzles move with the newly formed containers while filling.

3,808,773

PROCESS AND APPARATUS FOR THE ADSORPTIVE PURIFICATION OF GASES

Jorg Reyhing, and Wilhelm Rohde, both of Munich, Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

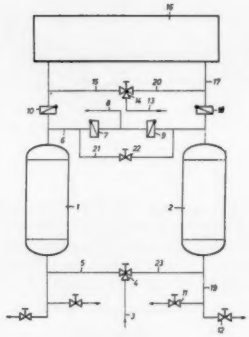
Filed Dec. 28, 1971, Ser. No. 213,051

Claims priority, application Germany, Dec. 28, 1970, 2064137

Int. Cl. B01d *53/02*

U.S. Cl. 55—31 **13 Claims**

A method for the adsorptive purification of gases containing water and one or more secondary components which comprises passing the gas through a molecular sieve bed, thereby charging the molecular sieve with adsorbable components, terminating charging of the molecular sieve upon the breakthrough of the least easily adsorbable secondary adsorbate component prior to the breakthrough of water vapor therefrom, and regenerating the molecular sieve at a temperature of 100° – 200° C., preferably 100° –150° C., and especially about 100° C., by passing a heated purge gas through the molecular sieve bed in a direction opposite to the adsorption direction. Partial dehydration is obtained which is sufficient to lower the water dew point of a gas subsequently adsorbed on the regenerated molecular sieve to −70° C. or lower, thereby



enabling the thusly treated gas to be subjected to low temperature fractionation. The use of these relatively low temperatures for molecular sieve regeneration results in substantial energy savings without impairing the effectiveness of the molecular sieve in gas adsorption.

An apparatus suitable for use in the above process permits continuous gas adsorption and molecular sieve regeneration includes alternatingly reversible adsorption reactors having a purge gas heating unit disposed therebetween which reduces full cycle times to from 1 to 2 hours.

3,808,774

ABATEMENT OF ACID GAS EMISSIONS

Aaron J. Teller, Great Neck, N.Y., assignor to Teller Environmental Systems, Inc., Worcester, Mass.

Continuation-in-part of Ser. No. 102,561, Dec. 29, 1970, Pat. No. 3,721,066. This application Oct. 18, 1971, Ser. No. 190,389. The portion of the term of the patent subsequent to Mar. 30, 1990, has been disclaimed.

Int. Cl. B01d *53/04*

U.S. Cl. 55—68 **23 Claims**

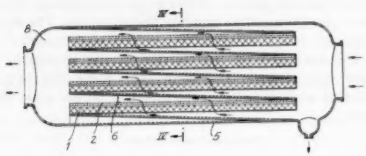
The application discloses that a high efficiency of abatement of acid gas emissions in an effluent gas of an industrial or commercial manufacturing or treatment process can be achieved by passing the effluent through a particulate chromatographic mass of nepheline syenite, a naturally occurring ore, on which a certain amount of water is adsorbed. The wetting of, and the consequent adsorption of water by, the ore may be effected by passing a stream of humid air through the mass of particles either prior to or concurrently with the arrival of the acid gas-laden effluent thereat, or alternatively by passing the effluent through a humidifying zone prior to its coming in contact with the ore. An additional advantage found is that particulate emissions, if present, are also abated. In lieu of nepheline syenite, pot line alumina or activated alumina, in either case pretreated with an aqueous solution of sodium hydroxide or sodium carbonate, may be used as the adsorbent medium. This abstract is not to be taken as a complete exposition or as a limitation of the present invention, however, the full nature and extent of the invention being discernible only by reference to and from the entire disclosure.

3,808,775

APPARATUS FOR DRYING AND SUPERHEATING STEAM

Laszlo Heller; Laszlo Szucs, and Zoltan Szabo, all of Budapest, Hungary, assignors to Energiagazdalkodsi Intezet, Budapest, Hungary

Filed Sept. 20, 1971, Ser. No. 181,918
Claims priority, application Hungary, Sept. 21, 1970, OE 573
Int. Cl. B01d 46/12
U.S. Cl. 55—269 8 Claims



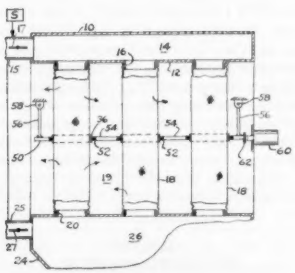
An apparatus for drying and superheating steam. The apparatus includes a moisture-separator through which steam is initially directed to remove moisture therefrom, this separator having a relatively large discharge end through which the dried steam flows upon leaving the moisture-separator. Connected to this latter discharge end of the moisture-separator is a heat-exchanger for superheating the dried steam, this heat-exchanger having a receiving end fixed to the discharge end of the moisture-separator and this receiving end of the heat-exchanger is approximately of the same area as the discharge end of the moisture-separator.

3,808,776

DUST COLLECTOR

William J. Jesernig, Timonium, Md., and Arunas A. Arstikaitis, Dearborn Heights, Mich., assignors to American Standard Inc., New York, N.Y.

Filed Dec. 9, 1971, Ser. No. 206,377
Int. Cl. B01d 46/04
U.S. Cl. 55—300 3 Claims



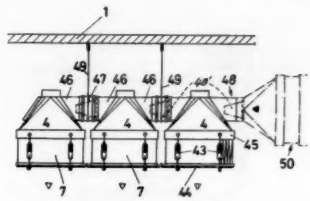
A dust collector comprising vertical fabric filter tubes having upper and lower mouth openings connected to separate dusty gas manifolds so that dusty gas simultaneously flows downwardly through each upper mouth opening and upwardly through each lower mouth opening. Improved shaker mechanism is arranged intermediate the tube mouth openings.

3,808,777

OVERHEAD AIR FILTER

Gerhard Max Neumann, and Hans-Joachim Wittemeier, both of Berlin, Germany, assignors to Delbag-Luftfilter Gesellschaft mit beschrankter Haftung, Berlin, Germany, by said Neumann

Division of Ser. No. 31,674, April 24, 1970, Pat. No. 3,760,568. This application Nov. 14, 1972, Ser. No. 306,312
Claims priority, application Germany, Apr. 29, 1969, 1922268
Int. Cl. B01d 31/00
U.S. Cl. 35—473 5 Claims



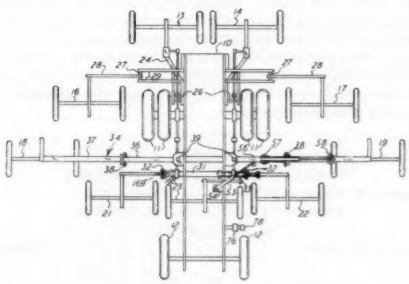
Incoming filtered air is discharged as a uniform downcurrent into a room from an array of horizontal filter units of generally pyramidal shape with a filter cell across the larger end, these units being either fitted individually into or out apertures in a false ceiling by connecting pieces at their apex, or connected side-by-side as a common duct by connecting pieces on their sloping sides.

3,808,778

LAWN MOWERS ARTICULARLY SUPPORTED ON A TRACTOR

Knud H. Hoffmeyer, Racine; Donald G. Haffner, Greendale, and Frank A. Ecker, Racine, all of Wis., assignors to Jacobsen Manufacturing Company, Racine, Wis.

Filed Jan. 8, 1973, Ser. No. 321,681
Int. Cl. A01d 75/30
U.S. Cl. 56—7 16 Claims



Lawn mowers articularly supported on a tractor, and there being nine mowers in all. Each of the mowers is connected to the tractor through a pivot joint which is under the influence of a hydraulic cylinder assembly for raising and lowering each mower for positioning the mowers for mowing and for transport. The hydraulic cylinder assemblies are connected with a pump and with hydraulic valves which control the action of the hydraulic cylinders. The two mowers which are laterally farthest from the tractor are supported on an arm which has two pivot joints under the influence of two cylinder assemblies. Hydraulic check valves are in the hydraulic circuit for sequencing the action of the two cylinder assemblies active on

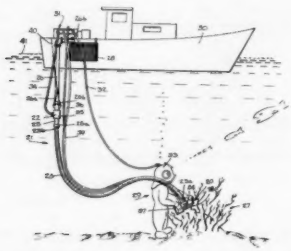
the arm, so that the mower on the outer end of the arm can be positioned in a compact transport position with the tractor. Also, lost motion mechanism is included in the support of the mowers so that they can assume the elevation of the ground being mowed.

3,808,779

SEA HARVESTING APPARATUS AND METHOD

Alan C. Randall, Little Compton, R.I., assignor to Sea Harvest, Inc., New York, N.Y.

Filed Feb. 17, 1972, Ser. No. 227,034
Int. Cl. A01d *45/08*
U.S. Cl. 56—9 **28 Claims**



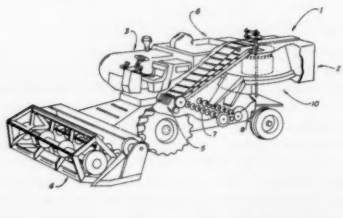
Diver from boat working along ocean bottom cuts Irish Moss, agar weed, or similar marine vegetation growing at depth of up to about 100', using a manually maneuvered sickle bar cutting unit which carries and is powered by a light weight air motor. Cutting unit further includes a collecting hood to which a flexible suction hose is attached for hydraulic delivery of the cut plants via an airlift, by which the suction is induced, to the surface and into a collecting strainer in or alongside the boat. Airlift is positioned just below the water surface and is spaced by the flexible suction hose a considerable distance away from the diver. Cutting unit air motor receives driving air, and diver receives breathing air from air compressor aboard the boat. Airlift receives driving air preferably from said air compressor, and cutting unit air motor preferably exhausts to atmospheric pressure, but said motor exhaust air could be utilized to drive airlift. Cutting unit oriented for side-to-side sweeping movement in cutting of plant stalks, and several hood configurations are described. Cutting blade has relatively short length, and air motor is relatively small. Airlift delivery tube receives driving air via a relatively large number of small diameter air apertures therethrough, the apertures being angled 20° upwardly, and the sum of their areas being 50 percent larger than the interior diameter of the delivery tube.

3,808,780

SEPARATOR MEANS FOR COMBINES

Kenneth D. Wood, 1826 Greenfield, Wichita, Kans.

Filed Nov. 15, 1972, Ser. No. 306,514
Int. Cl. A01d *45/02*
U.S. Cl. 56—14.6 **9 Claims**



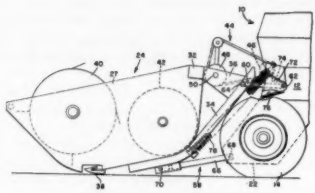
A separator for combines has a reel and header, thresher cylinder, conveyor for moving threshed cereal grass, powering means and a housing comprising the combine structure thereof. The separator is comprised of an independently rotatable outer cylinder member having a duct therein and mounted within and powered by the combine. It has an inner cylinder with an air mover also powered by the combine in operation to recirculate air within the separator. In operation the outer cylinder while rotating receives threshed material from the conveyor, disposes same through a distributor to the stalk-grain separator and receives air from the air mover directing same through the duct to the central portion of the member against the outward motion of the grain, separating the grain from its stalk. Air is recirculated within the separator passing from the air mover through the duct, being discharged toward the central portion of the separator, passing through the inner cylinder member and into the air mover. The separator preferably has a dehumidifier having heat transfer coils within the duct and on the outside of the structure. The separator uses rotation and centrifugal force and opposed recirculating airflow to separate threshed cereal grass stalks and grain.

3,808,781

HARVESTING PLATFORM SUSPENSION SYSTEM

Merlyn Duane Bass, and Sidney Joseph Boushek, Jr., both of Ottumwa, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Dec. 8, 1972, Ser. No. 313,577
Int. Cl. A01d *35/14*
U.S. Cl. 56—15.9 **8 Claims**



A self-propelled windrower has a traction unit and a forward transversely elongated harvesting platform, which cuts a standing crop, converges it, and delivers it rearwardly through a central crop discharge opening. The platform is mounted for vertical adjustment on the traction unit by a pair of four-bar linkages at opposite sides of the traction unit, each linkage including a fore-and-aft upper link and a fore-and-aft lower link, which is formed by a hydraulic cylinder. A pair of downwardly and forwardly inclined tension springs extend between the traction unit and the platform and counterbalance most of the weight of the platform when the machine is operating with the platform riding on the ground. The platform is raised to transport position by extending the cylinders, which affects the geometry of the linkages so that the springs raise the platform, and after the platform raises a predetermined amount, the upper links engage stops, so that the linkages function as a hinge-type suspension with the platform raising about the pivot connections between the upper links and the platform.

3,808,782

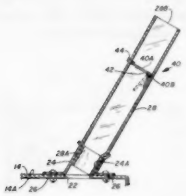
SHREDDER ADAPTOR

Larry L. McWilliams, Tulsa, Okla., assignor to S &M Enterprises Inc., Tulsa, Okla.

Filed May 21, 1973, Ser. No. 362,438
Int. Cl. A01d *35/26*
U.S. Cl. 56—16.9 **5 Claims**

Apparatus for utilizing a rotary type lawn mower for shredding leaves, twigs, grass cuttings and so forth, the lawn mower housing horizontal portion having an opening therein, an adapter attachment affixed to the upper surface of the

housing surrounding the opening, an upwardly extending chute detachably secured to the adapter attachment means whereby leaves, grass cuttings, etc. inserted into the chute



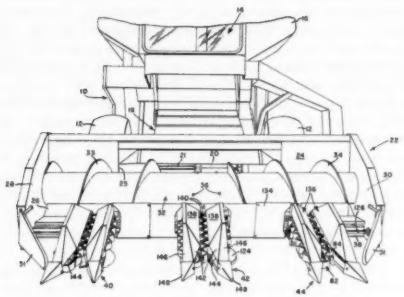
passes downwardly and into the mower below the housing and a lid for closing the adapter attachment means when the chute is not attached permitting the lawn mower to be used in the normal fashion.

3,808,783

SOYBEAN HARVESTING HEADER

Gail Russell Sutherland; Ronald Keith Leonard, and Joe Henry Hoeksema, all of Des Moines, Iowa, assignors to Deere & Company, Moline, Ill.

Filed June 7, 1972, Ser. No. 260,503
Int. Cl. A01d *45/02*
U.S. Cl. 56—106 **27 Claims**



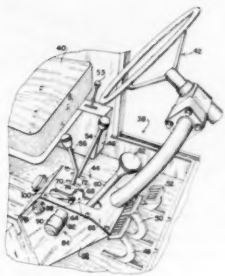
A conventional self-propelled combine has a forwardly extending feederhouse with a forward intake end and a crop feeding conveyor for moving crops from the intake end to the separating mechanism in the combine. A row crop header is mounted on the front of the feeder housing and includes a transversely extending platform with a plurality of harvesting units extending forwardly therefrom at transversely spaced intervals. Each harvesting unit includes a pair of belt-like gathering elements respectively disposed on the opposite sides of a passageway, the gathering elements having cooperative, loop-like, flexible portions, which mesh with each other to grasp the soybean plants and move them rearwardly along the passageway after the stalks have been severed by a rotary knife disposed below the forward ends of the gathering elements. The gathering elements move the severed plants rearwardly to a transverse auger on the platform, which converges the crop and delivers it to the intake end of the feeder housing. The individual row units are laterally adjustable to accommodate different row spacings, and independently float on the ground so that the respective knives are maintained close to the ground.

3,808,784

REVERSE LOCKOUT

Frank H. Gardner, Grundy Center, Iowa; Norman G. Stroup, Orion, and Eugene J. Krukow, Cordova, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Mar. 16, 1973, Ser. No. 342,125
Int. Cl. A01d *67/00*
U.S. Cl. 56—208 **10 Claims**



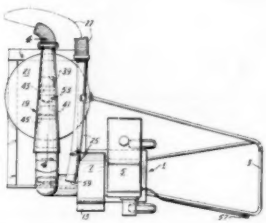
A reverse drive lockout mechanism for a combine harvester having a crop-gathering platform which is provided with ground-engaging control fingers, the lockout mechanism preventing the harvester from inadvertently being driven in reverse when such control fingers are in ground proximity. A normally de-energized solenoid, mounted on the speed lever console, maintains its plunger projected and in the path of movement of the speed lever, thus preventing entry of the lever into the reverse speed range. A switch assembly becomes effective when the platform is raised a predetermined distance from the ground to establish an electrical circuit through the solenoid winding, thus retracting the plunger and allowing the speed lever to be moved in the reverse speed range.

3,808,785

NUT HARVESTING DEVICE

Rhett R. Petcher, Rt. 8, Box 387, Roanoke, Va.

Filed May 23, 1973, Ser. No. 362,882
Int. Cl. A01d *51/00*
U.S. Cl. 56—328 **12 Claims**



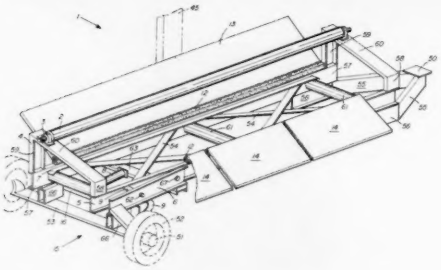
Nuts are sucked up from the ground and collected in a receptacle after being separated from leaves and other debris. As the nuts and debris pass through a tapered separator located on top of the receptacle cover, they strike baffles within the separator and fall into the receptacle through passageways in the cover.

3,808,786

FRUIT HARVESTING APPARATUS

Alfred Beckens, Fish Farm Rd., Sodus, N.Y.

Filed Apr. 13, 1973, Ser. No. 350,770
Int. Cl. A01g *19/00*
U.S. Cl. 56—329 **18 Claims**



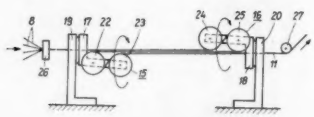
A novel fruit harvesting apparatus is described. The apparatus includes an elongated framework, a shaker, a conveyor, a deflector, a conveyor elevator and a flexible drape which can be extended on the ground under the tree to be harvested. After fruit is shaken from the tree and deposited on the extended drape, the drape is rolled onto a roller supported on the elongated framework. As the drape is rolled onto the roller, fruit disposed therein is discharged onto a deflector and thereafter onto the conveyor. The deflector "breaks" the fall of the fruit thereby reducing the possibility of bruising, and the conveyor transports the fruit to a receptacle. The discharge end of the conveyor is elevatable so that the receptacle can be placed thereunder. By placing the receptacle in close proximity to the discharge end of the conveyor, the possibility of fruit bruising is further reduced. Specific inventive details and advantages are described hereafter.

3,808,787

ROTATING INTERMEDIATE STORER FOR THE TWISTING OF STRAND ELEMENTS FOR ELECTRICAL CABLES

Dieter Vogelsberg, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munchen, Germany

Filed Mar. 17, 1972, Ser. No. 235,672
Claims priority, application Germany, Mar. 31, 1971, 2116607
Int. Cl. D07b *3/00;* **D01h** *7/02*
U.S. Cl. 57—34 AT **14 Claims**



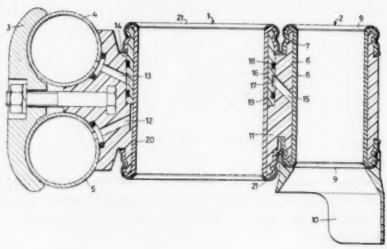
A rotating type intermediate storer is provided for SZ-type twisting of strand elements of electrical cables. The rotating intermediate storer comprises two sets of sheaves or rollers disposed at a distance from each other. The sheaves of these sets of sheaves are arranged eccentrically with regard to the axis of rotation of the intermediate storer. For the transition from one set of sheaves to the other, the strand elements are led so that they extend in immediate proximity with the axis of rotation.

3,808,788

GRASPING DEVICE FOR DOFFING FULL BOBBINS AND RELOADING EMPTY TUBES IN A SPINNING FRAME

Giovanni Viglione, Genova, Italy, assignor to Nuova San Giorgio S.p.A., Genova, Italy

Filed Mar. 8, 1973, Ser. No. 339,051
Claims priority, application Italy, Nov. 16, 1972, 021308/72
Int. Cl. D01h *9/02*
U.S. Cl. 57—52 **1 Claim**



A grasping device for doffing full bobbins and reloading empty tubes in a spinning frame is disclosed, wherein two grippers provided with expansible chambers are united together and independently actuated. According to the invention, a first gripper comprises a stiff outer sleeve, an inner resiliently yielding sleeve having the ends curled over and fastened to the outside of said stiff sleeve and a couple of comparatively stiff collars snappingly engaged onto said curled ends of the resiliently yielding sleeve so as to lock them in a sealtight manner against the outer wall of said stiff sleeve. The second gripper comprises a first stiff sleeve integral with the stiff sleeve of the first gripper and equipped with a first hole for communication between a first feeding duct for a pressurized fluid and the inner cavity of said first sleeve, with a second hole for communication between a second pressurized fluid feeding duct and a widened annular portion formed in the inner cavity of said first sleeve, and with a third hole which passes also through the stiff sleeve of the first gripper, for establishing a communication between said annular widened portion and the expansible chamber defined between the two sleeves of the first gripper, the second gripper comprises also a second stiff sleeve inserted into said widened annular portion of the inner cavity of the first gripper and equipped with an annular groove for affording a communication between said second and said third hole of the first sleeve, a resiliently yielding sleeve inserted in the interior of said first and said second sleeve and equipped with ends which are curled over and fastened to the outside of said first and said second sleeve and a couple of comparatively stiff collars snappingly engaged onto said curled over ends so as to lock them in a sealtight manner against the outer wall of said stiff sleeves.

3,808,789

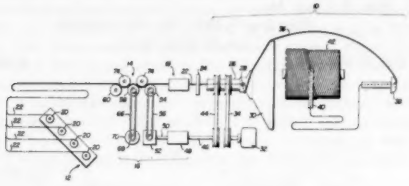
APPARATUS FOR COLLECTION OF LINEAR MATERIAL

Raymond E. Hurley, Heath, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 26, 1973, Ser. No. 326,739
Int. Cl. D01h *7/90*
U.S. Cl. 57—58.7 **4 Claims**

In a system for twisting together several ends of heavy treated glass yarns, an improved means for feeding the ends and maintaining constant tension thereon, comprising multiple power driven feed rolls whose speed is continuously varied in response to the tension in the strand between the feed rolls and the twister, to maintain the strand tension at a desired level. Strand tension is sensed by a pivotally mounted member which is biased into strand-deflecting contact with the strands,

and whose angular position is thus responsive to strand tension. The position of the sensing member controls a potentiometer which varies the current supplied to the feed roll drive, thereby controlling the feed rate and providing a feedback signal to maintain constant strand tension.



3,808,790

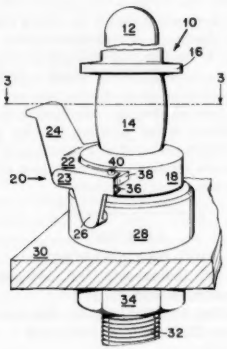
SPINDLE BRAKE WITH ARTICULATED AND DETACHABLE BRAKE SHOES

Frederick A. Preston, Pendleton; Philip B. Tarbox, and Gordon C. Anderson, both of Clemson, all of S.C., assignors to Saco-Lowell Corporation, Easley, S.C.

Filed July 23, 1973, Ser. No. 381,638

Int. Cl. D01h *7/22*

U.S. Cl. 57—88 **8 Claims**



A manually actuable brake for rotatable spindles of textile yarn processing machines is disclosed wherein the bifurcate branches of the elastically deformable brake have at their leading separated ends joined or articulated brake shoes which are pivotable and detachable at their pivot joints from said branches for, respectively, application of full braking surfaces to the spindle upon initial contact and ready replacement of the shoes when they become worn and no longer functional.

3,808,791

ELECTRIC CLOCK

Hideo Hara, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

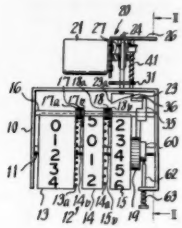
Filed Feb. 20, 1973, Ser. No. 333,875

Claims priority, application Japan, Feb. 26, 1972, 47-23729

Int. Cl. G04c *3/00*; **C04b** *19/24*

U.S. Cl. 58—23 A **12 Claims**

An electric clock having a time display device and a driving source for intermittently driving the time display device, the driving source including a DC motor provided with a self-contained electric power source such as a dry cell, a switch inserted between the emitter-collector electrodes of a motor driver transistor and adapted to be closed or opened by a permanent magnet which is moved toward and away from the switch in response to the rotation of the DC motor drive shaft, and a cam driven by the motor to rotate one or more drums of the time display device by a predetermined angle so as to change the time display.



3,808,792

DRIVE MECHANISM OF AN ELECTRIC TIMEPIECE

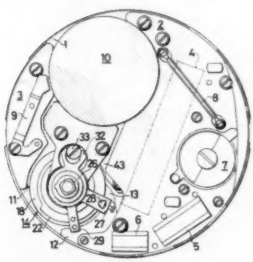
Akira Nikaido, Tokyo; Mitsuo Onda, Oomiya; Takayasu Machida, Iruma; Fumio Nakajima, Tokyo; Takashi Toida, Tokyo, and Yoshihiko Yanagawa, Tokyo, all of Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Jan. 11, 1972, Ser. No. 216,968

Claims priority, application Japan, Feb. 1, 1971, 46-3707

Int. Cl. G04c *3/04*

U.S. Cl. 58—28 A **2 Claims**



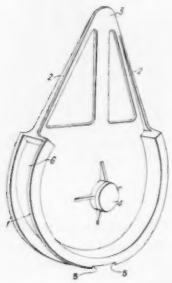
In an electrical timepiece a pair of drive coils are formed in an elliptical configuration with the major axes thereof disposed substantially tangentially to the circumference of the drive wheel at diametrically opposed positions. The drive magnets each have a rectangular configuration and the major axis of each magnet is disposed parallel to a respective tangent to the circumference of the drive wheel. The impulse pin on the drive wheel which imparts movement to the star wheel is angularly offset relative to the center line between the drive wheel and the star wheel.

3,808,793

ROCKING PENDULUM

Ronald William Ebdon, Gosport, England, assignor to E. S. Perry Limited, Gosport, England

Filed Apr. 6, 1972, Ser. No. 241,540
Claims priority, application Great Britain, Apr. 13, 1971, 9238/71
Int. Cl. G04f 11/02
U.S. Cl. 58—130 R 11 Claims



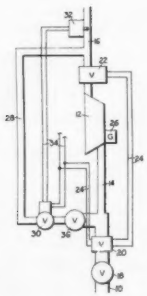
A device capable of providing audible oscillatory movement of a body about a position of stable equilibrium is disclosed. The body normally rests on two edges, but when displaced therefrom will oscillate about the position making an audible "click" as it steps from one edge to the other.

3,808,794

METHOD AND APPARATUS FOR HARNESSING PRESSURE OF OIL AND GASWELLS FOR GENERATING ELECTRICITY

Wilburn W. Wood, 2714 N.E. 119th St., Vancouver, Wash.

Filed May 30, 1972, Ser. No. 257,704
Int. Cl. F01k 27/00
U.S. Cl. 60—1 7 Claims



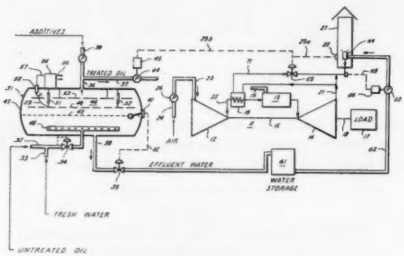
A method and apparatus associated with oil and gas wells for supplying pressure from such wells for driving a turbine. The apparatus utilizes a balancing pressure control system comprisng a valve in a bypass line around the turbine and controlled by a pressure regulator valve on the output side of the turbine. The balancing pressure control system allows pressure through the bypass line selectively to maintain a uniform pressure in the output of the turbine when the demands on the turbine fluctuate. The system includes manual shut-off valves and overload regulator valves. An embodiment of the invention includes a control system on the well side of the turbine for supplying uniform pressure to the turbine.

3,808,795

POLLUTION-FREE GAS TURBINE SYSTEM

Roy N. Lucas, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Dec. 7, 1972, Ser. No. 313,015
Int. Cl. F02c 7/30
U.S. Cl. 60—39.5 9 Claims



This specification discloses:

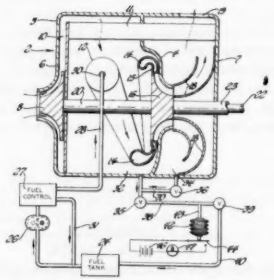
A pollution-free system for operating a gas turbine from a liquid untreated oil containing an alkali metal salt. Fresh water is dispersed within the untreated oil and passed into a vessel containing an electric field for forming a treated oil phase and a salt-laden effluent water phase. The treated oil is a high quality combustible fuel which is intermixed with compressed air, and subjected to combustion for operating the gas turbine with the resultant discharge of high-temperature combustion product gases which are released through an exhaust vent to the atmosphere at temperatures of about 1,000° F. The effluent water is passed through an injector means for dispersion into the exhaust vent so that the combustion product gases vaporize the effluent water forming a total gas solution without visible components and at temperatures where sodium ion materials are relatively non-corrosive to the ferrous metal conduits forming the exhaust vent.

3,808,796

FUEL DRAIN SYSTEM

Esten W. Spears, Jr., Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 20, 1972, Ser. No. 299,604
Int. Cl. F23n 5/24; F02c 9/00
U.S. Cl. 60—39.09 F 5 Claims



A fuel drain system for a gas turbine engine includes a first drain for fuel which may gather in a sump downstream of the turbine, with a valve in the drain which closes when there is a slight pressure differential toward the turbine exhaust. This drain joins a second drain from a sump to which fuel may drain from the combustion apparatus of the engine. The com-

bined drain goes through a second valve which remains open until pressure within the space ahead of the turbine becomes slightly greater than the pressure threshold of the first valve. Fuel which drains through the second valve passes to a catch basin and from this through a third valve to the engine fuel tank. The third valve closes at a pressure slightly above the setting of the second valve in the direction toward the fuel tank. A pressure responsive device lights an indicator light if there is substantial pressure downstream of the second valve indicating that it has failed to close. Fuel which may accumulate in the engine upon an aborted start, flameout, or shutdown of the engine is discharged to the tank upon restart of the engine.

3,808,797

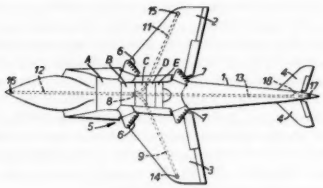
FUEL SYSTEMS FOR AIRCRAFT GAS TURBINE ENGINES

Keith Robinson, Churchdown, England, assignor to Dowty Fuel Systems Limited, Cheltenham, England

Filed Feb. 29, 1972, Ser. No. 230,499

Int. Cl. F02c *9/08*

U.S. Cl. 60—39.28 R **11 Claims**



A fuel system for a gas-turbine engine including a source of fuel at pressure, a flyweight device driven at a speed proportional to engine speed, a first-adjustable fuel flow means adjusted by centrifugal movement of the flyweight device, manually adjustable spring means acting on the flyweight device to oppose centrifugal movement at least over a substantial upper range of engine speeds, a second-adjustable fuel flow means, a single-manually operable means jointly controlling the spring means and the second fuel flow means such that at low altitudes for the lower range of engine speeds, the centrifugal force developed by the flyweight device is unable to overcome the load of the spring whereby the fuel flow to the engine from said source is determined by the second fuel flow means and such that for the higher range of engine speeds centrifugal force developed by the flyweight device is able to overcome the loading on the adjustable spring means whereby the first fuel flow means is operable to determine fuel flow from said source to the engine.

3,808,798

FUEL CONTROL SYSTEM FOR GAS TURBINE ENGINE

John Sassons Taylor, 113 Ferndown Rd., Solihull, Warwickshire, England

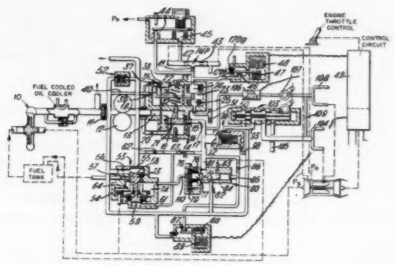
Filed Dec. 28, 1971, Ser. No. 213,074

Claims priority, application Great Britain, Jan. 6, 1971, 560/71

Int. Cl. F02c *9/10*

U.S. Cl. 60—39.28 R **5 Claims**

A fuel control system for a gas turbine engine has a boost pump, a main pump, a metering arrangement, downstream of the main pump and a pressurising valve downstream of the metering arrangement. The pressurising valve is responsive to pressure at the metering arrangement outlet to open the valve, and to pressure at the main pump intake to shut the valve. This



latter pressure increases during low fuel flows, causing the pressurising valve to maintain the pressure at the metering arrangement outlet.

3,808,799

FUEL METERING VALVE

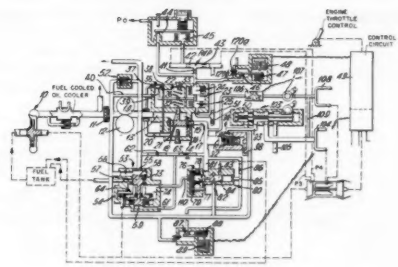
John Sassons Taylor, 113 Ferndown Rd., Solihull, Warwickshire, England

Filed Dec. 28, 1971, Ser. No. 213,063

Claims priority, application Great Britain, Jan. 6, 1971, 557/71

Int. Cl. F02c *9/10*

U.S. Cl. 60—39.28 R **8 Claims**



A fuel metering valve for a gas turbine engine includes a pair of chambers within a body, one of the chambers containing devices sensitive to pressure signals derived from the engine compressor. A control element is connected to the pressure sensitive devices and sealingly extends into the second chamber to control the magnitude of a servo pressure signal which is used to control a variable metering orifice between an inlet and an outlet for the valve. A restricted orifice interconnects the first and second chambers.

3,808,800

FUEL CONTROL SYSTEM FOR GAS TURBINE ENGINE

John Sassons Taylor, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Dec. 28, 1971, Ser. No. 213,108

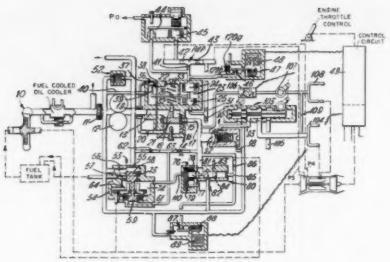
Claims priority, application Great Britain, Jan. 6, 1971, 558/71

Int. Cl. F02c *9/10*

U.S. Cl. 60—39.28 R **12 Claims**

A fuel control system for a gas turbine engine comprises a pump, a metering valve downstream of the pump and a spill valve connected across the pump, said spill valve being

responsive to the pressure drop across the metering valve and to the engine speed to spill fuel, in a first condition to the upstream side of the pump and in a second condition both to the upstream side of the pump and to a fuel tank.



3,808,801

FUEL CONTROL SYSTEM FOR GAS TURBINE ENGINE

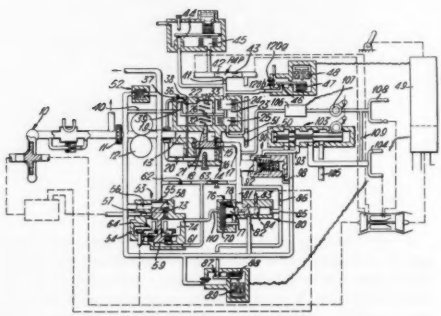
John Sassons Taylor, 113 Ferndown Rd., Solihull, Warwickshire, England

Filed Dec. 28, 1971, Ser. No. 213,125

Claims priority, application Great Britain, Jan. 6, 1971, 559/71

Int. Cl. F02c 9/10

U.S. Cl. 60—39.28 R **20 Claims**



A fuel control system for a gas turbine engine comprises a main pump, an auxiliary pump supplying fuel from a reservoir to the main pump, a metering valve responsive to air pressure signals from the engine compressor, a pilot valve controlling at least one of the air pressure signals in responsive to electrical control signals, a first spill valve connected across the main pump and responsive to the pressure drop across the metering valve and to engine speed, a second spill valve operable in response to further electrical signals in the event of malfunction of the pilot valve to control fuel flow to the engine by spilling fuel from the metering valve outlet, the second spill valve also being responsive to an engine speed signal, and a pressurising valve responsive to an increase in pressure upstream of the main pump to increase the pressure at the metering valve outlet.

3,808,802

VORTEX COMBUSTOR

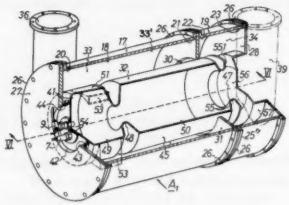
Yasusi Tanasawa, Nagoya, Japan, assignor to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya-shi, Japan

Filed Apr. 3, 1972, Ser. No. 240,699

Claims priority, application Japan, Apr. 1, 1971, 46-20623

Int. Cl. F02g 7/04

U.S. Cl. 60—39.65 **20 Claims**



A vortex combustor of high efficiency, intensity and stability comprises a first cylindrical combustion chamber having an inlet means, a fuel supplying device and an igniting device, a second cylindrical combustion chamber having a throttled open part, and a connecting part having a throttled opening to connect the first combustion chamber and second combustion chamber, thereby to form respectively a forced vortex zone in the central region and a natural vortex zone in the outer region surrounding said central region of each of the first and second cylindrical combustion chambers with swirling air introduced through said inlet means, and to burn the mixture of air and fuel in the forced vortex zone of the first cylindrical combustion chamber and in the natural vortex zone of the second cylindrical combustion chamber.

3,808,803

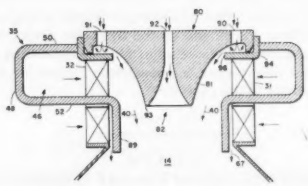
ANTICARBON DEVICE FOR THE SCROLL FUEL CARBURETOR

Enrico Salvi, Salem, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 15, 1973, Ser. No. 341,440

Int. Cl. F02c 7/22

U.S. Cl. 60—39.74 R **8 Claims**



An anticarbon device for a scroll-type carburetor consists of a frustro-conical plug mounted on the upstream wall of the spin chamber at a location along the axis of the core outlet and the primary vortex. A plurality of passageways formed therethrough permit air to be introduced into the scroll and directed against those wall locations where carbon deposits usually form because of the reverse high temperature gas flow. The plug also retains the high air/fuel velocities through the swirl vanes for flashback prevention.

3,808,804

MARINE PROPULSION

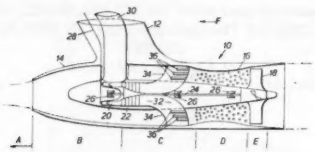
John Lanfear Scott-Scott, Bulkington, England, assignor to Rolls-Royce (1971) Limited, London, England

Filed Feb. 5, 1973, Ser. No. 329,334

Claims priority, application Great Britain, Feb. 11, 1972, 6475/72

Int. Cl. B63h *11/08, 11/02*

U.S. Cl. 60—221 8 Claims



A marine propulsion unit comprises a duct having in flow series, a divergent portion, an intermediate and mixing portion in which a centre body is located and a nozzle portion having a convergent-divergent nozzle, the centrebody having in flow series, combustion means and turbine means and being adapted to receive a supply of fuel and compressed air from sources located remotely of the centrebody, the turbine means being arranged to drive an impulse rotor located at the outlet of the nozzle portion and the exhaust from the turbine means being arranged to flow into the mixing portion of the duct.

The source of compressed air, which is preferably located in the hull of the vessel can be a single or twin spool gas generator, a gas turbine engine having a tapping from a suitably sized compressor or a gas generator with a power turbine arranged to drive a compressor.

3,808,805

PROCESS FOR THE CONVERSION OF EXHAUST GASES OF THE INTERNAL COMBUSTION ENGINES INTO HARMLESS PRODUCTS

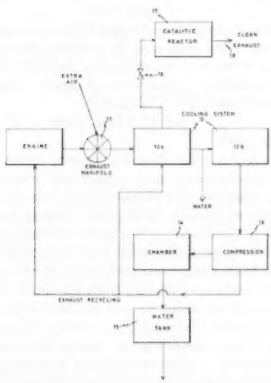
Luis E. Miramontes C., El Greco No. 39-204-B, Mexico City, Mexico

Filed June 21, 1972, Ser. No. 264,999

Claims priority, application Mexico, Sept. 28, 1971, 130421

Int. Cl. F02b *75/10;* F01n *3/02, 3/14*

U.S. Cl. 60—274 4 Claims



A process involving the conversion of the exhaust gases of the internal combustion engines into harmless products by contacting said gases with an additional amount of air, circulating the resulting mixture through a dual cooler system having a heat exchanger and pipe with a plurality of fins, such cooled gaseous mixture is compressed in a pressure chamber, wherein the water vapor in the gases is condensed and discarded whereas the remaining gaseous portion is either fed back to the engine for recycling, or to a catalytic reactor so as to effect an exhaustive combustion of the waste gases, which therefore evolve as harmless products.

3,808,806

EXHAUST GAS PURIFYING DEVICE

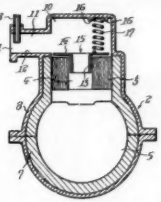
Hirokazu Nakamura, and Tadahiko Ito, both of Kyoto, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 28, 1972, Ser. No. 248,756

Claims priority, application Japan, May 11, 1971, 46-36966

Int. Cl. F01n *3/14*

U.S. Cl. 60—288 2 Claims



An exhaust gas purifying device for use in an internal combustion engine, which has an inlet for introducing exhaust gas exhausted from each cylinder of the engine, a thermal reaction chamber for reburning the exhaust gas, and a catalytic chamber provided immediately upstream of said thermal reaction chamber, said inlet and catalytic and reaction chambers forming or acting as a manifold for the exhaust gas. Thus, detrimental components contained in the exhaust gas may be effectively reduced with the compact device.

3,808,807

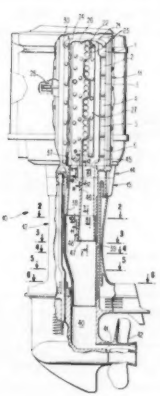
TUNING ARRANGEMENT FOR OUTBOARD MOTOR

Richard A. Lanpheer, Oshkosh, Wis., assignor to Brunswick Corporation, Chicago, Ill.

Filed Aug. 27, 1971, Ser. No. 175,651

Int. Cl. F02b *27/04*

U.S. Cl. 60—313 5 Claims



An improvement in the exhaust system for a two-cycle engine comprising one or more sets of three cylinders connected

to the crank shaft 120° apart, the exhaust ports of which communicate with a common exhaust chamber formed in association with the cylinder block. A diverging passage leading from the common exhaust chamber to a spacious exhaust tube enclosed within the drive shaft housing produces a negative pressure from a cylinders positive exhaust pulse, which negative pressure aids in scavenging the cylinder. The geometry of the diverging passage and the exhaust tube are such that a positive pulse is created by the exit of the negative pulse from said diverging passage and propagates back through the diverging passages arriving at the exhaust ports of the cylinder simultaneously with a positive pulse from a subsequently fired cylinder to aid in supercharging.

3,808,808

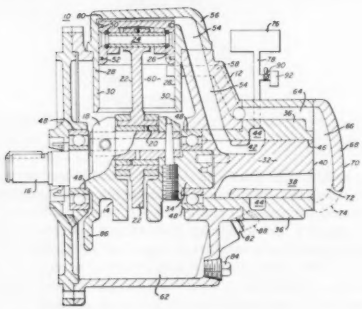
WET OR DRY SUMP MOTOR

George A. Hibbard, River Rd., Claremont, N.H.

Continuation of Ser. No. 195,233, Nov. 3, 1971, abandoned. This application Jan. 24, 1973, Ser. No. 326,350

Int. Cl. F15b *11/06*

U.S. Cl. 60—327 **10 Claims**



A compressed air motor having an interchangeable rotary valve cap to enable the motor to be operated selectively with a wet or dry sump depending on whether the usage is required on a horizontal axis or an axis deviating from the horizontal.

3,808,809

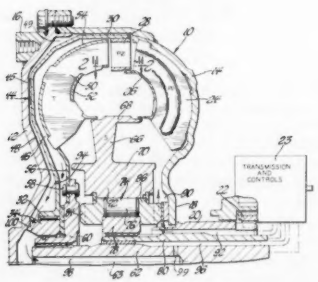
FLUID UNIT WITH AUXILIARY ROTOR

Ernest W. Upton, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 29, 1972, Ser. No. 310,663

Int. Cl. F16h *41/06*

U.S. Cl. 60—347 **5 Claims**



A torque converter having an auxiliary rotor which can be selectively connected to the input for pumping transmission fluid. The blades of this auxiliary rotor have a negative or backward bend with respect to direction of rotor rotation to modify the flow directed toward the bladed turbine by a bladed primary pump to reduce the capacity of the unit and provide for increased input speed and output torque.

3,808,810

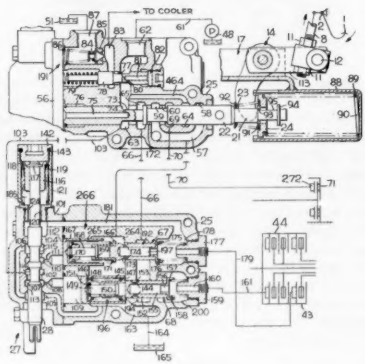
HYDRAULIC MODULATING VALVE

Robert E. Schott, and Donald W. Longshore, both of New Berlin, Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 317,644, Dec. 22, 1972, Pat. No. 3,780,762. This application Aug. 27, 1973, Ser. No. 392,029

Int. Cl. F15b *1/02, 11/16*

U.S. Cl. 60—416 **10 Claims**



A plurality of hydraulic pressure modulating valves with a directional valve to selectively operate the modulator valves. The directional valve is mechanically and hydraulically operated responsive to the modulated pressure of one of the modulating valves.

3,808,811

HYDROSTATIC UNIT WITH VARIABLE CYLINDER-CAPACITY AND TRANSMISSION INCORPORATING SAID UNIT

Pierre Andre Georges Lepelletier, Chatou, France, assignor to Societe Anonyme Francaise Du Ferodo, Paris, France

Filed July 31, 1972, Ser. No. 276,459

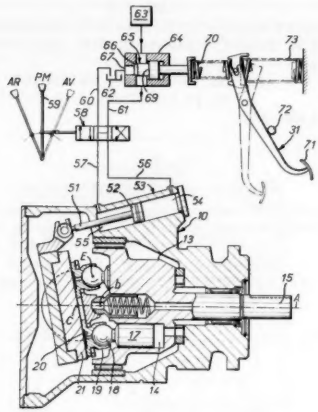
Claims priority, application France, Aug. 19, 1971, 71.030191; June 6, 1972, 72.20233

Int. Cl. F16h *39/46*

U.S. Cl. 60—444 **19 Claims**

The invention relates to hydrostatic units with variable cylinder-capacity comprising a shaft and a barrel coupled for rotation, a plurality of cylinders formed in said barrel and a like plurality of pistons slidably-mounted in said cylinders so as to define chambers of variable volumes adapted to cooperate with a plate centered at a pre-determined point on the axis of said shaft, one of said members (barrel and plate) being continuously coaxial with said shaft while the other member is pivotally mounted about an axis perpendicular to the axis of said shaft, so as to take-up a large number of positions more or less inclined with respect to the axis of the shaft for the purpose of forming a cylinder-capacity regulating device, said positions including a position in axial alignment with the shaft axis and corresponding to the minimum cylinder-capacity, and a control system acting on said regulating device, the pivotal axis of said device meeting the axis of said shaft at a point on the latter axis which is substantially displaced with respect to said pre-determined point, said regulating device being

pivotally mounted and floating and being subjected to two oppositely-acting torques, one of which is servo-controlled by the control systems and moves the regulating device away from its position of minimum cylinder-capacity, while the



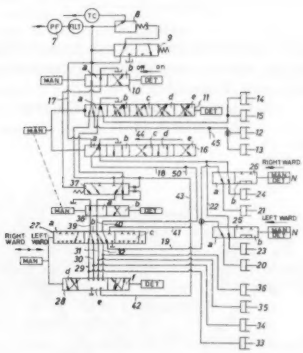
other is a restoring torque resulting from the axial displacement of said two points and moving the regulating device towards its position of minimum cylinder-capacity; the units may be incorporated in the transmission systems of fork-lift trucks or automobile vehicles.

3,808,812

HYDRAULIC CONTROL SYSTEM IN A POWER SHIFT TRANSMISSION OF A CRAWLER TYPE TRACTOR

Eiji Kawamura, and Hiroyuki Taki, both of Osaka, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Mar. 3, 1972, Ser. No. 231,512
Claims priority, application Japan, Mar. 3, 1971, 46-10579
Int. Cl. F15b *11/16*; **B62d** *11/00*
U.S. Cl. 60—484 **5 Claims**



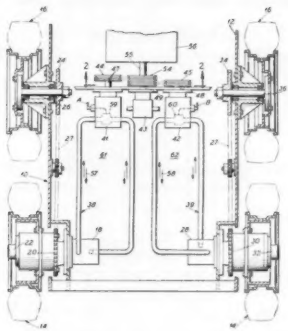
A hydraulic control system in a power shift transmission of a crawler type tractor which has a change-over valve connected to a first branched fluid passage branched from the fluid passage connecting a first speed valve to low speed clutches and also connected to a second branched fluid passage branched from the fluid passage connecting a second speed valve to a first turning valve, and a pressure-reducing valve connected to at least one of the branched fluid passages for reducing the hydraulic pressure of the fluid passage. Thus, abnormal heat generation taking place upon engagement of the clutches in the transmission may be effectively prevented.

3,808,813

HYDRAULIC DRIVE APPARATUS

Chester I. Spinks, 777 Brighton, Zanesville, Ohio

Filed Mar. 23, 1972, Ser. No. 237,469
Int. Cl. F15b *18/00*; **F16h** *39/02*
U.S. Cl. 60—486 **1 Claim**



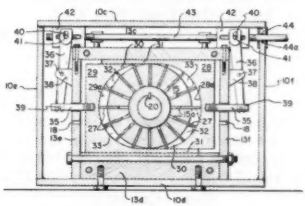
A plurality of hydraulic flow sources feed a plurality of hydraulic motors. A single source of mechanical power transmits power to the several hydraulic flow sources by a V-belt arrangement cooperating with the sources in such a manner that variation of length of the belt can be controlled by moving all of the hydraulic flow sources simultaneously and not with respect to each other.

3,808,814

FLUID TRANSMISSION

Robert W. Macy, II, 802 Second Ave., Rock Springs, Wyo.

Filed Mar. 20, 1972, Ser. No. 235,910
Int. Cl. F16h *39/46*
U.S. Cl. 60—487 **6 Claims**



A fluid transmission comprising a variable delivery, rotary pump and a fixed volume hydraulic motor. The rotary pump is operated to supply fluid to turn the hydraulic motor, and as the rotary pump fluid volumetric output is changed the speed of rotation of the hydraulic motor varies. Fluid output variations are accomplished by changing the chamber volume within which the rotor of the rotary pump turns. The chamber volume is varied by moving a pair of housing components having arcuate faces defining opposing chamber walls within which the pump rotor rotates. The pump rotor has a plurality of spaced sliding vanes radiating therefrom and as the rotor turns the vanes are forced outward to be in constant sealing

engagement with the opposing arcuate chamber faces. In addition to controlling power output from the hydraulic motor, by directing a greater volume of fluid to the hydraulic motor than it is receiving from the rotary pump the hydraulic motor can be made to act as an opposing pump, to provide a braking action within the fluid transmission.

3,808,815

HEATERS FOR HOT-GAS ENGINES

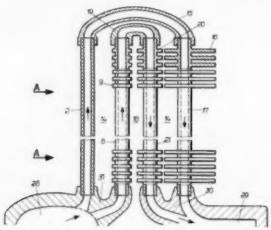
Andreas Zacharias Friedemann, Augsburg, Germany, assignor to Motoren-Werke Mannheim AG Vorm, Benz ABT. Stationarer Motorenbau, Mannheim, Germany

Filed Nov. 6, 1972, Ser. No. 304,274

Claims priority, application Germany, Nov. 4, 1971, 2154714

Int. Cl. F02g *1/04*

U.S. Cl. 60—517 **12 Claims**



A heater of a hot-gas engine comprises substantially U-form tubular devices each connected between a hot chamber and a regeneration chamber of the engine. The two limbs of each device are formed by two tubes positioned one downstream of the other with respect to the flow of primary fluid medium. The limbs of the devices are transverse to this flow and are arranged side-by-side in at least two rows to form at least two grids which are face-to-face with each other. The rows of limbs also extend transversely of the flow of primary medium.

3,808,816

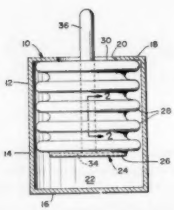
TEMPERATURE RESPONSIVE DEVICE

William P. Lucas, Stratford, Conn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Aug. 15, 1972, Ser. No. 280,935

Int. Cl. F28d *15/00*; **F03g** *7/06*

U.S. Cl. 60—530 **9 Claims**



A temperature responsive device includes a bellows sealingly mounted in a casing to define a sealed chamber therebetween with a thermally responsive fluid filling the chamber; a plastic coating on the bellows impedes heat transfer thereto and retains the heat in the fluid causing acceleration of its volumetric change.

3,808,817

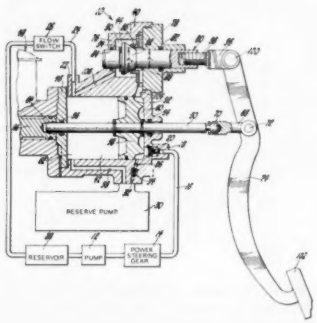
PRESSURE BALANCED HYDRAULIC BRAKE BOOSTER

Ronald W. Bennett, Miamisburg, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 16, 1973, Ser. No. 324,207

Int. Cl. F15b *7/00, 13/10*

U.S. Cl. 60—548 **3 Claims**



A hydraulic brake booster is shown which can withstand hydraulic supply system back pressure without affecting its output or brake pedal reaction. The booster control valve is of the open center type and is installed in its own valve chamber. The pedal pivot reaction force is utilized to operate the control valve.

The booster reaction system includes the control valve and its valve seat. The amount of brake reaction force transmitted to the brake pedal for any particular brake apply force generated by the booster may be varied by changing the effective valve seat diameter. In addition, initial brake pedal effort, and therefore line support pressure, may be modified by providing a reaction spring. The booster is compatible with a reserve pump system as well as with other brake system control units.

3,808,818

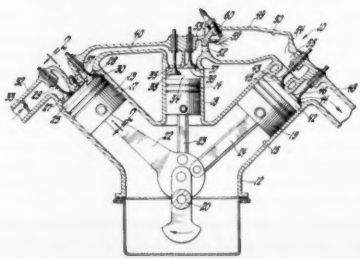
DUAL COMBUSTION ENGINE AND CYCLE

Roy S. Cataldo, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 4, 1972, Ser. No. 278,044

Int. Cl. F02b *41/02, 53/08*

U.S. Cl. 60—15 **9 Claims**



A dual combustion engine and cycle involving sequential modes of constant volume and constant pressure combustion.

A preferred embodiment includes combustion, satellite and expansion cylinders with a constant volume combustion chamber located intermediate the satellite and expansion cylinders. Compression and constant volume combustion take place in the combustion cylinders followed by partial expansion in the satellite cylinders, further combustion at constant volume in the combustion chamber and final expansion in the expansion cylinders. In an alternative embodiment, the satellite cylinders are eliminated and the engine operates at a lower pressure ratio with complete expansion taking place in the expansion cylinders.

3,808,819

STEAM TURBINE INSTALLATION

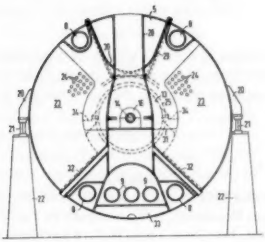
Wilhelm Engelke, and Gerhard Purr, both of Mulheim, Ruhr, Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim, Ruhr, Germany

Filed Sept. 12, 1972, Ser. No. 288,300

Claims priority, application Germany, Sept. 23, 1971, 2147444

Int. Cl. F01k *9/00*

U.S. Cl. 60—690 **8 Claims**



In a steam turbine installation, a condenser is disposed on both sides of a low-pressure turbine and the condenser along with the low pressure turbine are enclosed within a pressure-tight cylindrical housing. The housing supports both the low-pressure turbine and condenser on an external foundation. The housing also includes a removable V-shaped segment extending along the entire longitudinal length, of the housing and disposed at an elevation above the turbine shaft. The V-shaped segment is of such width that the inside casings and rotors of the low-pressure turbine can be removed through the opening remaining after the V-shaped segment is removed.

3,808,820

PILE DRIVING UTILIZING STANDING WAVE VIBRATIONS

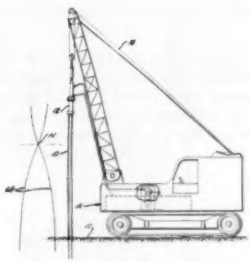
Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif.

Filed Sept. 29, 1972, Ser. No. 293,479

Int. Cl. E02d *7/18*

U.S. Cl. 61—53.5 **3 Claims**

A pile is driven into the earth by means of vibrational energy which is applied to the pile near one end thereof, at a frequency such as to set up resonant standing wave vibration in the pile. Means are provided to assure that the standing wave pattern has a velocity node shifted toward the driving end thereof and a velocity antinode near the driven end thereof. This end result is achieved by first driving the pile into the ground a short distance with a limited amount of vibrational force and with limited bias force being applied by the pile against the earth. When the pile has penetrated to a depth where lateral vibrations thereof are damped by the earthen



material, the vibrational drive power is increased to cause the standing wave vibration with velocity nodes and antinodes as mentioned above.

3,808,821

SELF-POWERED CASING FOR FORMING CAST-IN-PLACE PILES

Kenneth W. Philo, 7 Palm Ave., San Rafael, Calif.

Filed Sept. 15, 1972, Ser. No. 289,705

Int. Cl. E02d *5/38*

U.S. Cl. 61—53.64 **11 Claims**

A self-powered casing for forming cast-in-place piles in the earth surface. A casing formed of a central cylindric tube and an outer segment casing. The outer segmented casing is tangential of the tube so that the casing can be placed by drilling. Actuators for longitudinally driving the individual segments of the outer casing with respect to the central tube. A casing capable of forming piles of virtually any cross-sectional shape.

3,808,822

PROCESS AND SYSTEM FOR INCREASING LOAD-BEARING CAPACITY OF SOIL

Stephen V. Chelminski, West Redding, Conn., assignor to Bolt Associates, Inc., Norwalk, Conn.

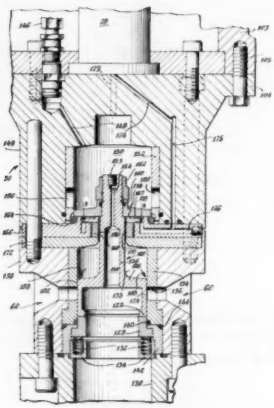
Division of Ser. No. 131,919, April 7, 1971, Pat. No. 3,707,848. This application Aug. 14, 1972, Ser. No. 280,087

Int. Cl. E02d *3/10;* **G10k** *11/00;* **F15b** *15/22*

U.S. Cl. 61—63 **8 Claims**

Improved air gun energy source adapted to be submersible in water, sand, gravel, soil, marshland, concrete slurry or

the like for repeatedly suddenly discharging pressurized air into the surrounding material including means providing a flushing venting of pressurized air from the operating cylinder into the release cylinder during the time when the operating piston is unseated from its stop to prevent the entry of grit into the release cylinder when the discharge port is opened by the release piston. The flushing venting air flow is shown passing around the release piston.



3,808,823

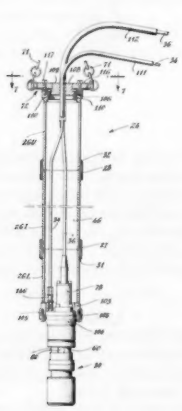
PROCESS AND SYSTEM FOR INCREASING LOAD-BEARING CAPACITY OF SOIL

Stephen V. Chelminski, West Redding, Conn., assignor to Bolt Associates, Inc., Norwalk, Conn.

Division of Ser. No. 131,919, April 7, 1971, Pat. No. 3,707,848. This application Aug. 14, 1972, Ser. No. 280,088

Int. Cl. E02d *3/10*

U.S. Cl. 61—63 **3 Claims**



An elongated support assembly for supporting a pressurized air releasing gun is disclsed including at least three hollow pipe sections, an upper, a lower, and an intermediate section, releasably coupled together by pipe couplings. The lower pipe section includes mounting means joined to its end on which the air gun is mounted, and the upper pipe section includes a split retainer with a high pressure line extending through the retainer and support assembly to the air gun.

3,808,824

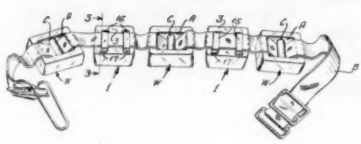
DETACHABLE DIVER'S WEIGHT

Billy Ray Johnston, 1221 W. Franklin, and William O. Schescke, Rt. 4, both of Salem, Mo.

Filed Jan. 15, 1973, Ser. No. 323,830

Int. Cl. B63c *11/30*

U.S. Cl. 61—70 **7 Claims**



A diver's weight is formed with a belt-gripping spring clip for easy attachment to and detachment from a weight belt without loosening or removing the belt from the diver's body.

3,808,825

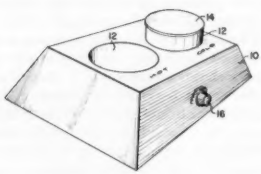
COMBINATION CUP COOLER AND WARMER

Serban Ciurea, Woodside, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed May 30, 1973, Ser. No. 365,341

Int. Cl. F25b *21/02*

U.S. Cl. 62—3 **2 Claims**



A device which may be utilized to warm one cup of liquid and simultaneously cool a second cup of liquid, with the device employing thermoelectric means to effect the heat transfer.

3,808,826

REFRIGERATION PROCESS

Ernest A. Harper, and Dunn M. Bailey, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

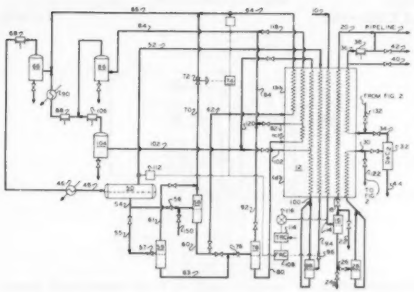
Filed Sept. 28, 1970, Ser. No. 75,992

Int. Cl. F25j *1/00, 1/02, 3/02*

U.S. Cl. 62—9 **20 Claims**

A refrigeration process employing a single- or plural-stage flashing of a refrigerant liquid to obtain high and/or inter-

mediate temperature cooling, and condensation of refrigerant vapor and subsequent flashing thereof to obtain low temperature cooling, of a heat exchange zone so as to remove heat



from said zone. In one embodiment, a gas is passed through said heat exchange zone in heat exchange relationship with said refrigerants and at least partially liquefied.

3,808,827

REFRIGERATION UNIT

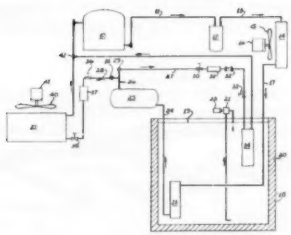
Eric Joseph Avon, 108 16th Ave., City of Two Mountains, Quebec, and Jack Jacob Rabow, 11 Briardale Ave., Hampstead, Quebec, both of Canada

Filed Mar. 7, 1973, Ser. No. 338,955

Claims priority, application Canada, Mar. 9, 1972, 136745

Int. Cl. F25d *3/00*

U.S. Cl. 62—59 **9 Claims**



A system is disclosed for maintaining a predetermined temperature range in an enclosed location when the outside of the enclosed location is subjected to variations of temperature. The system includes a compressor, a first condenser located externally of the enclosed location, a cooling liquid tank, a second condenser located within the cooling liquid tank, a first evaporator located within the cooling liquid tank, a second evaporator located within the enclosed location and a control means to direct a flow of coolant to the first and/or the second evaporator in response to the temperature requirements in the enclosed location. There is also disclosed a method of maintaining the temperature in an enclosed location within a predetermined range when the outside of the enclosed location is subjected to periods of high temperature. This method includes compressing the coolant vapour in a refrigeration cycle, condensing the vapour to a liquid and feeding the liquid to evaporate in an enclosed location to cool that location and also feeding the liquid to evaporate in a cooling liquid tank to cool the cooling liquid tank. The temperature inside the enclosed location is sensed and a control system automatically controls the flows of liquid to the enclosed location and the cooling liquid tank in response to a variation of temperature inside the enclosed location.

3,808,828

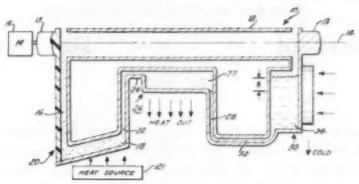
ROTARY THERMODYNAMIC APPARATUS

Frederick W. Kantor, 523 W. 112th St., New York, N.Y.

Continuation-in-part of Ser. No. 608,323, Jan. 10, 1967, Pat. No. 3,470,704. This application Oct. 6, 1969, Ser. No. 864,112

Int. Cl. F25b *3/00*

U.S. Cl. 62—116 **4 Claims**



A working fluid such as a liquifiable gas is rotated in a rotor having a thermodynamic compressor, a condenser chamber and an evaporation chamber. The high pressure zone in the condenser chamber is separated from the low pressure zone of the evaporator by a column of liquid. In several embodiments, a forepump is actuated by the thermodynamic compressor in order to vary the thermodynamic operating points of the device.

3,808,829

DELIVERY LIMITING VALVE UNIT FOR REFRIGERATION CIRCUITS

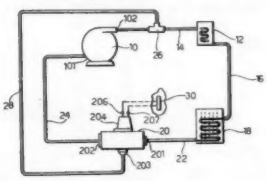
Marco Peruglia, Turin, Italy, assignor to Fiat Societe per Azioni, Turin, Italy

Filed Apr. 4, 1973, Ser. No. 347,766

Claims priority, application Italy, Apr. 19, 1972, 68222/72

Int. Cl. F25b *41/04*

U.S. Cl. 62—217 **1 Claim**



A delivery limiting valve for the control of a refrigeration circuit of the type comprising a continuously driven compressor, a condenser, and an evaporator, the valve being located in the pipe between the evaporator and the compressor and including two passages communicating between the inlet and outlet ports of the valve. A first passageway, which makes permanent communication allows only a very restricted flow therethrough, and a second passageway, which is closeable by a valve shutter, allows full free flow therethrough. The valve

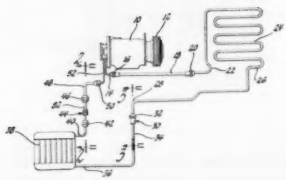
includes a solenoid operated valve shutter which controls a bypass route from the inlet port to the outlet port, which includes the chamber within which the shutter for the second passageway is located. When the solenoid is energized the bypass route is open causing a lowering of pressure in the valve shutter chamber with respect to the pressure in the second passageway thereby keeping the valve shutter open. Switches and/or thermostats located at various parts of the refrigerator circuit control the energization of the solenoid and thus the opening and closing of the second passageway by the shutter.

3,808,830

THERMALLY ACTUATED SUCTION THROTTLING VALVE

Ward J. Atkinson, Northville, and Richard C. Kozinski, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 16, 1973, Ser. No. 351,769
Int. Cl. F25b *41/04*
U.S. Cl. 62—217 **3 Claims**



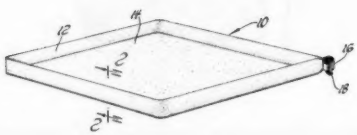
A freeze actuated suction throttling valve for use in an automobile air conditioning system between the evaporator and the compressor to maintain refrigerant temperature within the evaporator above a temperature which will cause the evaporator to accumulate frost on its exterior surfaces. The throttling valve includes a valve member upstream from a valve seat which is movable toward a closed position by an actuator also upstream from the valve seat. The actuator includes a rigid cup-shaped member filled with water and having a flexible diaphragm covering its one end. When the water freezes, the resulting expansion distorts the flexible diaphragm and moves the valve member toward a closed position.

3,808,831

ICE RINK

James A. Landry, 1200 Pilgrim, Birmingham, Mich.

Filed Jan. 22, 1973, Ser. No. 325,471
Int. Cl. A63c *19/10*
U.S. Cl. 62—235 **9 Claims**



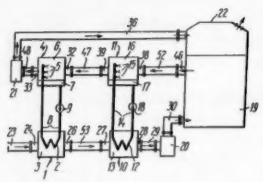
A water impervious sheet is connected at its perimeter with an inflatable tube to provide an ice skating rink. In use, the inflatable tube is filled with water which, when frozen, provides a solid perimeter wall for the ice rink. A skating surface is formed over the water impervious sheet by covering that sheet with a layer of water and freezing the water.

3,808,832

AIR CONDITIONING INSTALLATION

Lev Markovich Zusmanovich, ulitsa Dmitria Ulyanova, 4/34, korpus B, kv. 284, Moscow, U.S.S.R.

Division of Ser. No. 131,928, April 7, 1971. This application Oct. 16, 1972, Ser. No. 297,904
Int. Cl. F25d *17/04*
U.S. Cl. 62—309 **1 Claim**



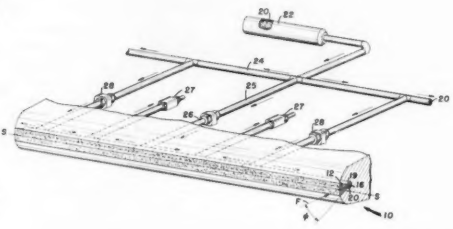
An installation for conditioning air in an associated space, comprising at least two pairs of heat exchangers, each such pair including a surface heat exchangers and a mixing one, the second (in the direction of the flow of the air being treated through the apparatus) pair of heat exchangers communicating through the surface heat exchanger of the first pair with the conduit through which ambient air to be treated by the apparatus is supplied, for this air, after its having been cooled in the last-mentioned heat exchanger, to be directed for still deeper cooling into the surface heat exchanger and the mixing heat exchanger of the second pair.

3,808,833

COMPACT TRANSPIRATION COOLING SYSTEM

Redfield W. Allen, Silver Spring, and Louis B. Weckesser, College Park, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 3, 1973, Ser. No. 347,731
Int. Cl. F25b
U.S. Cl. 62—467 **10 Claims**



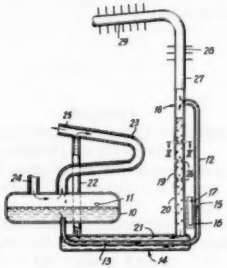
A transpiration cooling system for dissipating heat loads in sharp edges of flight vehicle structures moving at hypersonic velocities and sharp leading edges of gas turbine blades operation in high temperature environments, the invention comprises a compact plenum formed by a longitudinal coolant passage having a longitudinal porous segment in its wall, the compact plenum passage fitting within the leading edge structure and extending along the leading edge in a direction transverse to the external hot gas flow. Pressurized gaseous coolant, supplied by a remote reservoir or engine compressor thus flows within the compact plenum inside the leading edge structure and also transpires in a forward direction from the compact plenum through the porous segment and into the critically heated forward stagnation line region of the sharp leading edge structure.

3,808,834

ABSORPTION REFRIGERATION APPARATUS

Nicolas Eber, Zurich, Switzerland, assignor to Aktiengesellschaft electrolux, Stockholm, Sweden

Filed June 2, 1971, Ser. No. 149,209
Int. Cl. F25b 15/10
U.S. Cl. 62—490 1 Claim



A single vertically disposed conduit of abosrption refrigeration apparatus has a lower part serving as a generator or heat receiving section and an upper part serving as a rectifier. The single conduit defines an upright space for holding a body of absorption solution. Adsorption solution flows to an upper region of the upright space and is withdrawn from a lower region thereof, the solution flowing downward in the space in counterflow to upwardly flowing vapor expelled from solution by heating in the heat receiving section.

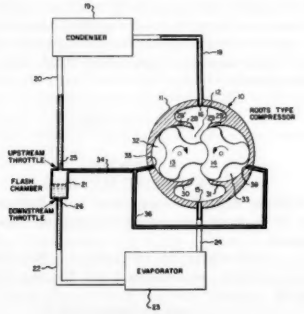
The single conduit is constructed and formed to provide a series of vertically spaced sharply reduced zones only in the upper part thereof which serves as the rectifier. The sharply reduced zones define constrictions through which upwardly flowing vapor can only pass in the form of small vapor bubbles and also offer material resistance to downward flow of absorption solution in the vertical space to build up and maintain a liquid column above each constriction. The sharply reduced zones are vertically spaced from one another to separate from the upwardly flowing vapor bubbles the relatively small quantity of liquid tending to be carried upward with the vapor.

3,808,835

REFRIGERANT HANDLING APPARATUS EMPLOYING ROOTS TYPE COMPRESSOR

Roger C. Weatherston, Williamsville, N.Y., assignor to Calspan Corporation, Buffalo, N.Y.

Filed Nov. 3, 1972, Ser. No. 303,463
Int. Cl. F25b 1/10
U.S. Cl. 62—510 1 Claim



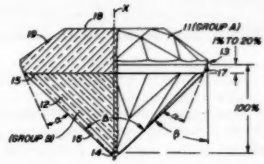
In an air-conditioning or refrigeration system, the expansive energy of the refrigerant itself is utilized to force some of the vapor formed in the throttling process into a closed volume chamber or well pocket of a Roots type compressor, one of the components of the system, facilitating a reduction in the required inlet volume and power of the compressor for a given cooling effect.

3,808,836

DOUBLET GEM CONSTRUCTION

Harry S. Jones, 50 Naresink Dr., Monmouth Beach, N.J.

Filed Nov. 30, 1972, Ser. No. 311,024
Int. Cl. A44c 17/00
U.S. Cl. 63—32 9 Claims



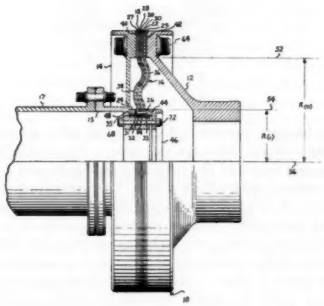
A doublet gem stone having a crown member of relatively high hardness and a pavilion member of lesser hardness but of higher optical dispersion and refractivity, and wherein the interface of the crown member and pavilion member is below the girdle of the gem stone. The crown member has a pavilion shoulder between the girdle and the interface which shoulder is more nearly parallel to the axis of symmetry of the gem stone than are the sides of the pavilion member and forms a projected angle of between 3° and 40° with said sides. The pavilion shoulder may be either partly or wholly on said crown member.

3,808,837

FLEXIBLE DISC COUPLING FOR TANDEM COUPLING ASSEMBLY

Norman J. Anderson, Fairview; John L. Decker, and Jon R. Manucso, both of Erie, all of Pa., assignors to Zurn Industries, Inc., Erie, Pa.

Filed Sept. 6, 1972, Ser. No. 286,734
Int. Cl. F16d 3/78
U.S. Cl. 64—13 16 Claims



A flexible disc-type coupling for use in a tandem coupling assembly transmits torque through a plurality of flexible discs. Each of these discs has a flexing area which includes at least one, but not more than about four, circumferentially extending convolutions. The discs are held apart by incompressible spacers and the area between the convolutions is free from all solids so that contact between flexure points, and thus surface damage, is avoided.

3,808,838

JOINT STRUCTURES IN OR FOR ROTARY SHAFTS

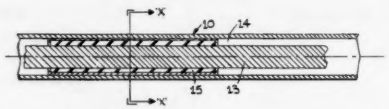
Edward Valentine Bowen, Birmingham, and Derek Simkins, Burton-on-Trent, both of England, assignors to GKN Transmissions Limited, Erdington, Birmingham, England

Filed July 28, 1972, Ser. No. 276,223

Claims priority, application Great Britain, July 30, 1971, 35852/71

Int. Cl. F16d 3/14

U.S. Cl. 64—27 NM 5 Claims



A rotary torque-transmitting shaft having a joint structure which includes a tubular outer component, an inner component disposed within the outer component, and an intermediate component of resilient material disposed in an interspace between the inner and outer components. The intermediate component is slidable axially relative to one of the other components and is in torque-transmitting relation to both of them. The inner and outer components are both of rectangular shape in cross-section so that relative angular movement is limited to a predetermined range even in the event of failure of the intermediate component. The joint structure may be used in a steering column shaft of a motor road vehicle.

3,808,839

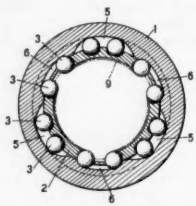
ENDLESS SLIDING BALL SPLINE SHAFT BEARING

Hiroshi Teramachi, 8-34-2 Higashi-Tamagawa, Setagaya-ku, Tokyo, Japan

Filed Sept. 8, 1972, Ser. No. 287,219

Int. Cl. F16d 3/06

U.S. Cl. 64—23.7 4 Claims



The bearing comprises a cylindrical tube, a spline shaft extending coaxially through the tube, a cylindrical ball retainer interposed between the tube and the shaft, and a plurality of balls constrained by the retainer. The inner surface of the tube is formed with axially extending first and second torque transmitting ball guide grooves having a U-shaped cross-section, the first and second grooves being arranged in alternation circumferentially of the tube and the first groove having a radial depth greater than that of the second grooves. The first grooves serve to guide non-loaded balls and the second grooves serve to guide loaded balls. At axially opposite ends, the inner surface of the tube is formed with circumferential grooves having a radial depth equal to that of the first guide grooves. The ball retainer has a uniform outer diameter and circumferentially alternating thick-wall and thin-wall portions. Each thick-wall portion is formed with a pair of angularly spaced axially extending third guide grooves, with each pair radially aligned with a respective first guide groove in the tube, and each thin-wall portion is formed with a pair of angularly spaced axially extending narrow slots having a width less than the diameter of the balls, and each pair of slots is radially aligned with a respective second guide groove in the tube. The outer surface of the retainer is formed with semi-circular ducts at its axially opposite ends each connecting a respective third guide groove to the circumferentially adjacent narrow slot. The shaft is formed with axially extending splines having a trapezoidal cross section, and each radially aligned centrally with the respective thin-wall portion of the retainer. The balls fill all of the grooves and slots.

3,808,840

THREE-STRAND YARN KNITTING MACHINE AND METHOD OF KNITTING

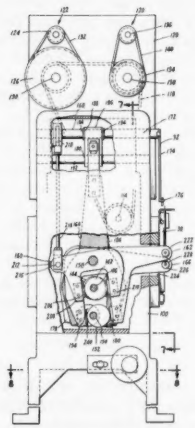
Robert C. Blezard, Woonsocket, and William E. Millard, North Providence, both of R.I., assignors to Smithfield Fibers, Inc., Providence, R.I.

Division of Ser. No. 96,059, Dec. 8, 1970, Pat. No. 3,738,125.

This application Apr. 16, 1973, Ser. No. 351,576

Int. Cl. D04b 23/02

U.S. Cl. 66—87 19 Claims



A method and machine for knitting three strands of yarn in two interlocking chains, wherein stitches in first and second strands of said yarn are formed about one reciprocating latch needle of said machine and stitches in said second strand and a third strand are formed about a second parallel reciprocating latch needle of said machine. Each needle pulls a newly formed stitch through a preceding stitch and casts-off the preceding stitch.

3,808,841

KNITTING METHOD

Max William Betts, Coventry, and Fran Robinson, Breaston, both of England, assignors to Courtaulds Limited, London, England

Filed Mar. 14, 1973, Ser. No. 341,051

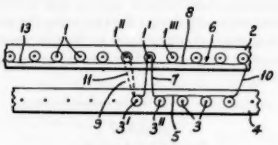
Claims priority, application Great Britain, Mar. 15, 1972, 11968/72

Int. Cl. D04b 9/46

U.S. Cl. 66—172 R 2 Claims

The invention discloses a method of forming a margin for a piece of plain knitted fabric formed on a knitting machine

having two opposed needle beds, a part of the margin being formed on each bed with loops knitted between the beds at locations spaced from the outer edge of the fabric, the loops losing otherwise U-shaped knitted courses.

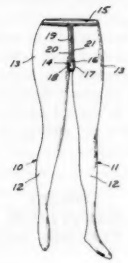


3,808,842

MANUFACTURE OF LADY'S PANTY HOSE

Max Fisher, Pennside, and Paul S. Gardner, Temple, both of Pa., assignors to Old Colony Hosiery Mills, Inc., Reading, Pa.

Filed Mar. 15, 1972, Ser. No. 234,724
Int. Cl. A41b *9/02, 9/04, 9/10*
U.S. Cl. 66—177 **9 Claims**



The panty hose comprises two similar knit blanks secured together to form a tubular body encircling portion and two tubular limb encircling portions depending therefrom. The body encircling portions of the blanks are composed of courses made with at least two stretch yarns, each of such courses being composed of conventional knit stitches and a selected number of run-guard stitches that form in the inner side of the blank a vertical panel. The two panels are medially slit downwardly to a point short of the lower ends thereof. The slit edges formed from each panel are connected either to one side of a crotch or panel portion or to the slit edges of the other panel, and in such manner that the unslit bottom portions of such panels are intermediate the ends of the crotch or panel portion, or the seam connecting such slit edges together. The vertical panel in each blank is at its top integral with a transverse band made of run-guard stitches and encircling the upper edge of the blank.

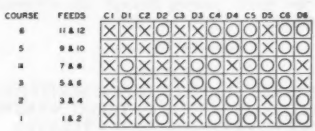
3,808,843

DOUBLE KNIT FABRIC

James H. Blore, Greenville, and Bobby L. Balcombe, Fountain Inn, both of S.C., assignors to Phillip Fibers Corporation, Greenville, S.C.

Filed May 1, 1972, Ser. No. 248,850
Int. Cl. D04b *7/04, 11/04*
U.S. Cl. 66—196 **10 Claims**

A double knit fabric and method of making same. Said fabric has cylinder-needle stitches of essentially constant length in one side (face) thereof and dial-needle stitches of varying length in the other side (reverse) thereof. When employing yarns of different colors, said reverse side has an ombre appearance.

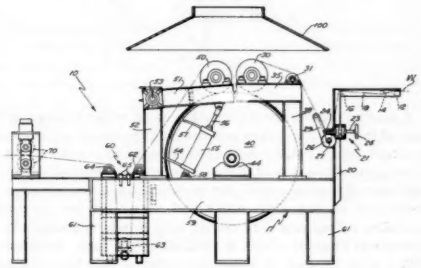


3,808,844

APPARATUS FOR CONTROLLING THE AMOUNT OF ELASTIC STRETCH IN STRETCH WOOLENS

Howard P. Oldfield, Smithfield, R.I., assignor to Worcester Textile Company, Centerdale, R.I.

Filed Aug. 19, 1972, Ser. No. 263,795
Int. Cl. D06c *1/08*
U.S. Cl. 68—5 D **5 Claims**



Apparatus for controlling the amount of elastic stretch in stretch woolens having a cylindrical drum rotatably mounted on a stand. A drive roll is supported by arms pivotally mounted on vertical members which extend upwardly from the stand and there is a piston mechanism for moving the drive roll into rolling contact with the cylindrical surface of the drum. A drag roll is also supported by arms mounted on vertical members which extend upwardly from the stand and the drag roll is positioned adjacent the drive roll with their axes of rotation being parallel to each other. A drive mechanism connected to the drive roll causes the cylindrical drum to rotate and results in the fabric being passed therearound and between the drum and the drive roll. The rotational speed of the drag roll is maintained slower than that of the driving roll to produce a stretch in the warp yarns of the fabric. The amount of stretch applied to these warp yarns is varied by mechanically controlling the rotational speed of the drag roll. Primary steam conduit structure is partially mounted within the cylindrical drum with the section within said drum having a plurality of apertures in its outer wall that allows the steam to be released within said drum. This steam in turn escapes from the drum through a multitude of apertures in its cylindrical surface and then passes through the fabric which is travelling around the drum. A secondary steam conduit structure is also partially mounted within the cylindrical drum with its internal portion being in the form of a helical coil which acts to prevent condensation in the drum of the steam released therein by the primary steam conduit structure. An auxiliary bath is mounted on the stand in a position to receive the fabric after it has passed around the drive roll. Squeeze rolls are supported on the stand in a position to receive the fabric after it has been passed through the bath. By varying the amount of

drag by the drag roll, the amount of permanent elastic stretch to be imparted into the woolen fabric passing through the apparatus can be varied as the permanent set is produced by the action of the steam passing through the chemically impregnated fabric.

3,808,845

SEALING ARRANGEMENT FOR PRESSURIZED GAS OR VAPOUR CONTAINERS FOR MATERIAL WEBS WHICH ARE TO BE CONTINUOUSLY TREATED

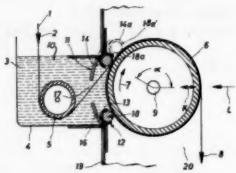
Karl Peter Lopata, Krefeld, Germany, assignor to Fa.Kleinewefers Industrie Companie GmbH, Krefeld, Germany

Filed July 3, 1972, Ser. No. 268,818

Claims priority, application Germany, Aug. 27, 1971, 2142926

Int. Cl. B05c *11/115*

U.S. Cl. 68—5 E **17 Claims**



A sealing means which includes a main roller having a portion of its cylindrical area positioned adjacent to an aperture in a tank which holds a fluid (either liquid or vapor) which is to be applied to a web of material as it passes through the tank and over the main roller. An endless elastic sealing strip is positioned on the main roller and surrounds the aperture, providing a fluid seal. The sealing strip is held in position by a cylindrical channel which is secured to the tank. Additional rollers may be used to enter the material into the tank and reverse its direction.

3,808,846

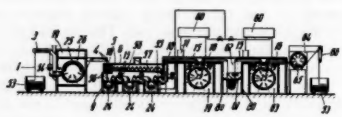
APPARATUS FOR THE CONTINUOUS TREATMENT OF NATURAL AND SYNTHETIC FIBERS WITH A SOLVENT

Heinz Fleissner, Egelsbach bei Frankfurt, Germany, assignor to Vepa AG, Basel Schweiz, Germany

Division of Ser. No. 835,529, June 23, 1969, abandoned. This application Dec. 10, 1970, Ser. No. 97,012

Int. Cl. B05c *3/138*

U.S. Cl. 68—19.1 **25 Claims**



The present disclosure is directed to an apparatus for the treatment of textile materials which comprises a wet-treatment device containing in its first portion a trough-shaped tank which contains a solvent, inlet means for introducing the materials to be treated to the wet-treatment device and into the solvent in a folded state, a sieve drum means subjected to a suction draft rotatably disposed in the second portion of the wet-treatment device, roller means for conveying the material being treated from the trough-shaped tank to the sieve drum means, press means disposed behind the sieve drum means for at least partially removing the solvent from the material being treated, dryer means disposed behind the press means, said dryer means comprising at least one sieve drum means subjected to a suction draft rotatably disposed in a treatment chamber, exhaust means provided at the outlet side of the treatment chamber, said recycle means also communicating with the solvent recovery device for recycling the substantially solvent free treatment medium back to the treatment chamber and outlet means for removing the material being treated from the dryer means.

3,808,847

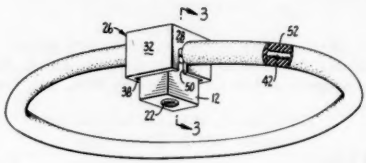
BICYCLE LOCK

Dwayne G. Vesely, 625 Shelter Creek Ln., San Bruno, Calif.

Filed Dec. 21, 1972, Ser. No. 317,221

Int. Cl. E05b *73/00*

U.S. Cl. 70—18 **7 Claims**



A lock for bicycles and like portable articles. The lock employs a conventional padlock and includes a casing that encloses the shackle of the padlock to render the shackle inaccessible to hacksaws and/or bolt cutters. A stranded cable having one end permanently attached to the casing and the other end removably attached thereto. Detachment of the latter end is effected by unlocking the padlock so that the body can move relative the casing. A thermally insulative sheath for encasing the cable.

3,808,848

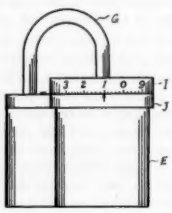
SAFETY LOCK

Yin-Lung Yang, 21-9 Chih-Yuan Village, Kangshan, China /Taiwan

Continuation-in-part of Ser. No. 654,764, July 20, 1967, Pat. No. 3,546,906. This application May 25, 1970, Ser. No. 40,188

Int. Cl. E05b *37/00, 67/22*

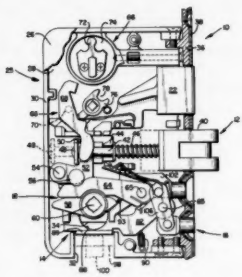
U.S. Cl. 70—21 **17 Claims**



A padlock which embodies both a variable key-operated device and a variable permutation-operated device independently within a lock. The lock can be locked either by one of the devices or by both of the devices. The lock can be unlocked by a coded key alone only when the variable permutation-operated device is in its unlocked position. Likewise the lock can be unlocked by the combination alone only when the key-operated device is in its unlocked position. When the devices are both in the locked position, the lock can be unlocked only when those who know the combination of the permutation-operated device as well as having possession of a coded key. Means are provided for varying either one or both

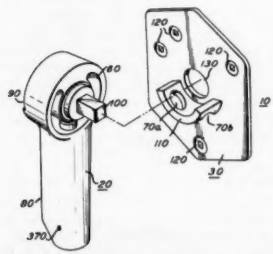
of the devices by the owner of the lock, thus rendering the original coded key and/or the combination inoperative, hence a new coded key or a new combination or both of them are necessary.

3,808,849
MORTISE LOCK HAVING FREELY MOVABLE EXTERNAL MANIPULATOR
Gordon A. Alexander, Newington, Conn., assignor to Emhart Corporation, Bloomfield, Conn.
Filed Apr. 2, 1973, Ser. No. 347,338
Int. Cl. E05b *55/10*
U.S. Cl. 70—149 **21 Claims**



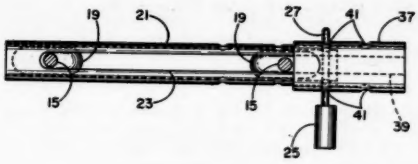
A mortise lock for use on an entrance door or the like has a latch operated by a thumbpiece from the outside except when the thumbpiece is released by a locking or disabling mechanism. In the released position, the thumbpiece and an associated operating lever contained within the lock casing are freely movable relative to other parts of a latchbolt retracting mechanism. The latchbolt may be retracted by a manual manipulator from the inside at all times. Various means compatible with parts of a conventional mortise lock are provided for effecting locking release of the thumbpiece.

3,808,850
LOCKING HANDLE ASSEMBLY
Russell W. Walters, Whitehall, Pa., assignor to BMR Security Products Corp, Reading, Pa.
Filed Mar. 2, 1972, Ser. No. 231,329
Int. Cl. E05b *13/10*; E05c *19/10*
U.S. Cl. 70—215 **20 Claims**



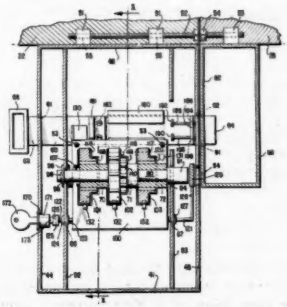
A locking handle assembly which includes a tubular mechanism within a longitudinal through passage of a handle. A locking plate having at least one opening is contained within a cavity of the handle and in a predetermined position of the handle, the locking plate opening is aligned with the through passage. The lock mechanism is insertable within the handle for removably securing the handle to the locking plate when the lock mechanism is inserted into the opening of the locking plate.

3,808,851
OUTBOARD MOTOR LOCK
Eugene H. Kargus, 747 London St., and Joseph F. Zolkoske, Jr., 928 Third St., both of Menasha, Wis.
Filed Apr. 10, 1972, Ser. No. 242,584
Int. Cl. F16b *41/00*
U.S. Cl. 70—232 **1 Claim**



The invention relates to an improved locking device for preventing the theft, and/or the accidental dislodgment during use, of outboard motors. The device consists of a one piece, slotted tubular member which is adapted to slide over and to engage and lock against movement the heads of the clamp screws for the motor supporting bracket. This tubular member is provided with a series of aligned holes adapted to receive the shackle of a padlock or equivalent locking means, in such manner that removal of the tubular member from locking engagement with the heads of the clamping screws is effectively prevented.

3,808,852
PUSH BUTTON COMBINATION LOCK
John P. Mohrhauser, 804 Prospect St., Maplewood, and Richard W. Strazza, 3 Turner Ct., Princeton, both of N.J.
Filed June 30, 1972, Ser. No. 268,011
Int. Cl. E05b *37/02*
U.S. Cl. 70—285 **12 Claims**



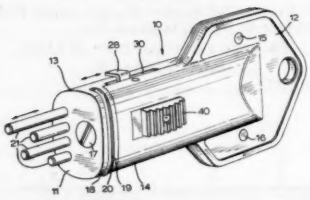
A push button combination lock having wheels containing the combination mounted completely within a container and wherein buttons are provided for manipulating the wheels through the container wall. Depressing each button will rotate each wheel and when all of the wheels are aligned in the correct combination, the lock can be opened.

3,808,853

ADJUSTABLE KEY FOR CYLINDER LOCKS

Kalju Helenurm, Willowdale, Canada, assignor to Jonathan Lock Limited, Toronto, Ontario, Canada

Filed Apr. 23, 1973, Ser. No. 353,406
Int. Cl. E05b 19/18
U.S. Cl. 70—411 10 Claims



An adjustable key for cylinder locks has a set of lock-engaging pins which may be manually set to a selected configuration and which are spring-biassed toward a neutral configuration. Locking means are provided to lock the pins in the selected configuration, and manually operable release means are provided to disengage the locking means from the pins so as to return the pins automatically to the neutral configuration.

3,808,854

PILFER-RESISTANT LOCK CONSTRUCTION, HAVING SEGMENTED CYLINDER

Leonard Mercurio, 34 Beaument Dr., Plainview, N.Y.

Filed Dec. 13, 1972, Ser. No. 314,608
Int. Cl. E05b 63/00
U.S. Cl. 70—419 4 Claims

A pilfer resistant lock construction characterized in the provision of a longitudinally segmented cylinder, each segment supporting a laterally shiftable tumbler. Each segment is separated from the other segments by a small ball seated in a pair of opposed corresponding detents. The balls remain in position under normal keyed operation. However, if an attempt is made to pick the lock, one tumbler at a time, the segments rotate axially with respect to each other, causing the balls to rotate out of the respective detents, resulting in longitudinal expansion of the space between the segments against the action of a longitudinally arranged spring. This expansion causes a locking action between the cylinder and a member which is non-rotatably fixed with respect to the lock housing, and prevents rotation of the cylinder within the lock. The forwardmost cylinder segment is devoid of a tumbler, and is free turning, to discourage attempts to drill out the cylinder, by rotating with the drill bit.

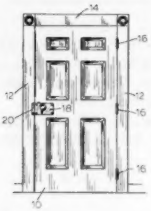
3,808,855

RIM LOCK CONVERSION SET

George B. Plunkett; Patricia M. Plunkett, R.D. No. 1, Glen Rock, Pa.; Loren H. Kroh, and Elizabeth H. Kroh, both of R.D. No. 1, Brodbecks, Pa.

Filed Feb. 26, 1973, Ser. No. 335,685
Int. Cl. E05b 9/00, 15/02
U.S. Cl. 70—448 9 Claims

A set of enclosing conversion members adapted to be mounted over a conventional rim lock and keeper for a door to cause the same to have an appearance of an expensive rim lock and keeper set of larger size than the conventional lock and keeper. To provide greater aesthetic value, the enclosing



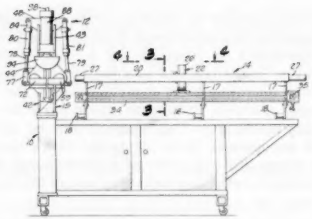
conversion members may be formed from a more attractive material than conventional iron and the like from which conventional rim locks and keepers are formed.

3,808,856

TUBE BENDING APPARATUS

Bruce J. Lance, 1460 Chase Dr., Corona, Calif.

Continuation-in-part of Ser. No. 60,328, Aug. 3, 1970, which is a continuation-in-part of Ser. No. 740,809, May 31, 1968. This application July 3, 1972, Ser. No. 268,775
Int. Cl. B21d 7/12
U.S. Cl. 72—7 24 Claims



Tube bending apparatus includes mechanism for advancing a tube to selected longitudinal positions between a ram die, a stationary wing die and a rotatable wing die; rotating the tube to selected orientations; and bending the tube to selected depths of bend by advancing the ram die towards the wing dies and against the tube to stretch and thereby bend the tube therearound. Hydraulic mechanism is included to balance the clamping pressures applied by the dies during the bending operation. The set of dies is designed to be removable. Thereby, the apparatus may be set up to handle different diameter tubes and to make bends along different radii by changing dies. One embodiment of apparatus is arranged to feed tubing to either of two die sets. One die set is designed for bending right-handed bent tubes while the other is designed for making left-handed bent tubes.

3,808,857

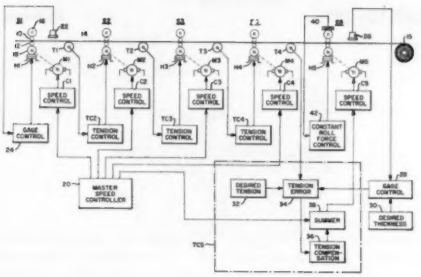
GAGE CONTROL METHOD AND SYSTEM FOR TANDEM ROLLING MILLS

John J. Connors, 5060 Elmcroft Ct., Clarence, N.Y.

Filed Sept. 29, 1972, Ser. No. 293,619
Int. Cl. B21b 37/02
U.S. Cl. 72—8 7 Claims

Gage control method and system for tandem rolling mills of the type wherein final output gage is controlled by comparing

actual output gage with desired output gage to develop an error signal for controlling the speed of the last stand and, hence, tension in the strip material being rolled between the last two stands. The invention is characterized in that the roll



force exerted on the strip by the last stand is maintained constant for all variations in last stand speed, thereby enabling a greater range of strip gage change via the last stand in the tandem mill.

3,808,858

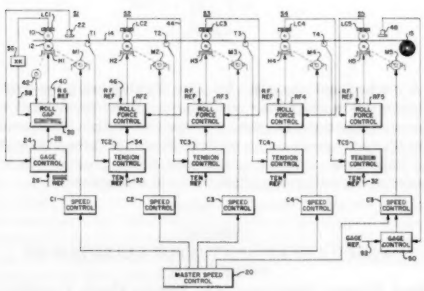
GAGE CONTROL SYSTEM AND METHOD FOR TANDEM ROLLING MILLS

John J. Connors, 5060 Elmcroft Ct., Clarence, N.Y.; Thomas J. Dolphin, 451 Old Greenbriar Rd., and John W. Cook, 84 Pin Oak Dr., both of Williamsville, N.Y.

Filed Sept. 29, 1972, Ser. No. 294,728

Int. Cl. B21b *37/02*

U.S. Cl. 72—8 **11 Claims**



Gage control system and method for tandem rolling mills wherein the roll force or roll gap on all stands in the mill is maintained constant. In the preferred embodiment of the invention, constant roll gap is maintained in the first stand while constant roll force is maintained in all succeeding stands except, possibly, the last stand where measured final output gage is the controlling parameter.

3,808,859

HYDRAULIC PRESSES

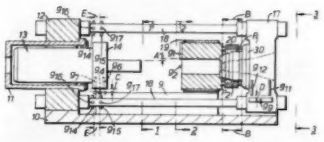
Ian Lewis Cameron, Blandford, England, assignor to Cefilac Compagnie du Filage des Metaux et des Joints Curty, Paris, France

Filed July 31, 1972, Ser. No. 276,447

Claims priority, application Great Britain, May 8, 1971, 36865/71

Int. Cl. B21c *51/00*

U.S. Cl. 72—31 **22 Claims**



A method and apparatus for detecting relative displacement of hydraulic press components such as stem, container die and mandrel. Measurements are taken using suitable detectors such as wide-gap air gauges.

3,808,860

METHOD AND APPARATUS FOR MANUFACTURING TUBES OR TUBULAR BODIES WITH INNER WALLS HAVING CROSS SECTIONS OF IRREGULAR SHAPES

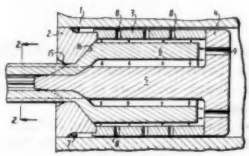
Yoshihiro Yamaguchi, Ashiya; Tomiharu Matsushita, Nishinomiya; Masataka Noguchi, Kobe; Junichi Nakagawa, Hatano, and Hakumi Hasegawa, Akashi, all of Japan, assignors to Kobe Steel Ltd., Kobe, Japan

Filed Aug. 16, 1972, Ser. No. 281,041

Claims priority, application Japan, Aug. 18, 1971, 46-63129

Int. Cl. B21c *25/04*

U.S. Cl. 72—60 **3 Claims**



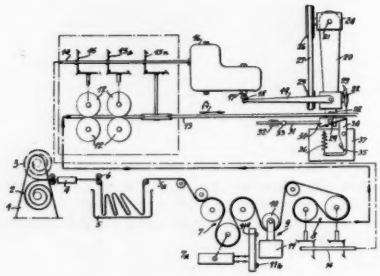
There are disclosed herein a method and an apparatus for manufacturing tubes or tubular bodies by means of hydrostatic extrusion, which tubes or tubular bodies have axially running holes therethrough having cross-sections of irregular shapes. The method and apparatus utilize a mandrel of novel construction which comprises a conical tip portion having a smooth peripheral surface, a cut or grooved intermediate portion with a sloped groove starting at a peripheral edge and a body portion formed with a flange and adapted to move longitudinally of a pressure chamber, as necessary. The conical tip portion is specifically intended to seal against the conical end of a metallic billet. Unless there is such a provision, there would be leakage of a fluid through the grooved portion because of direct contact of the grooved edge with the inner end surface of the billet. Thus, this method and the apparatus for performing the method enables one-step extrusion of tubes or tubular bodies having inner fins or inner walls having irregularly shaped cross-sections, with the accompanying advantages of providing complete sealing among the die, the billet and the mandrel, particularly in the inital stage of the extrusion.

3,808,861

APPARATUS FOR CONTINUOUSLY FORMING A TUBE AND CONTINUALLY CUTTING THE TUBE INTO SUBSTANTIALLY UNIFORM LENGTHS

Alain Edouard Plegat, Asnieres, France, assignor to Societe Anonyme Des Usines Chausson, Asnieres, France

Filed July 5, 1972, Ser. No. 269,243
Claims priority, application France, July 7, 1971, 71.24825
Int. Cl. B21j *11/00*
U.S. Cl. 72—132 7 Claims



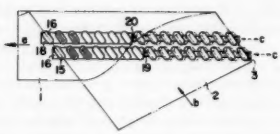
Apparatus for continuously forming a tube and continually cutting a tube into substantially uniform lengths comprises first and second strip drive mechanism with strip tensioning means therebetween for supplying an elongated strip at substantially constant speed to shaping wheels for forming the strip continuously into a tube and driven at the same constant speed, in combination with reciprocal cutting means driven at the same constant speed of said shaping means and means actuating the cutting means to effect cutting the tube into selected lengths.

3,808,862

APPARATUS FOR FORMING SPIRAL STEEL PIPE

Yasuhiko Tanaka; Yasumi Shimazaki, and Kenji Hagiwara, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed June 29, 1972, Ser. No. 267,459
Claims priority, application Japan, June 30, 1971, 46-56783
Int. Cl. B21f *3/02*
U.S. Cl. 72—135 4 Claims



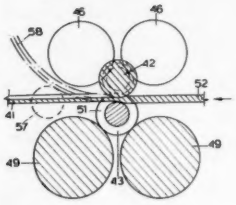
An apparatus for forming spiral steel pipe by separate type forming rolls which is characterized by stands carrying rolls for forming the inner and outer surfaces of the steel pipe, the stands being each split into two portions in a direction perpendicular to the axis of the steel pipe to be formed, one of the two portions being a fixed stand formed with a smaller length than the width of material plate for the intended steel pipe and the other portion being a stand movable in the axial direction of the steel pipe to be formed.

3,808,863

FORMING OF ARTICLES BY ROLLING

Jacob Marcovitch, 25 Melle St., Johannesburg, South Africa

Continuation of Ser. No. 889,627, Dec. 31, 1969, abandoned. This application Sept. 30, 1971, Ser. No. 185,333
Claims priority, application South Africa, June 18, 1969, 69/4340; Feb. 14, 1966, 66/804
Int. Cl. B21b *1/08*
U.S. Cl. 72—199 2 Claims



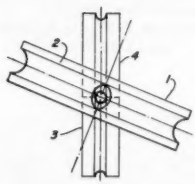
This invention relates to rolling elongated bars between a backed-up forming roller and die means. The die means is preferably formed by a pair of rollers which most conveniently roll T-section bar. The die means may alternatively be a long die. Containment means is provided to prevent the die means bursting outwardly during rolling.

3,808,864

METHOD AND APPARATUS FOR COLD DRAWING OR ROLLING OF METAL WIRE ROD

Tom Joachim Bennet, Smedjebacken, Sweden, assignor to Morgardshammar Aktiebolag, Smedjebacken, Sweden

Filed Sept. 8, 1972, Ser. No. 287,354
Claims priority, application Sweden, Sept. 10, 1971, 11494/71
Int. Cl. B21b *13/12*
U.S. Cl. 72—235 9 Claims



A method and apparatus for wire drawing using the oval-round series in which the round groove rolls are prestressed in opposite directions and the oval wire rod is then introduced into the round groove at an inclination such that the oval wire rod cooperates with the prestressed round groove rolls to produce wire rod having a desired round configuration.

3,808,865

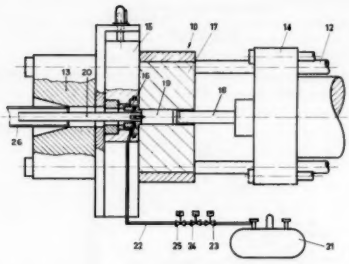
METHOD AND APPARATUS FOR EXTRUSION OF WORKPIECES

Alfred Wagner, Steisslingen, and Juergen Hesse, Dusseldorf, both of Germany, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Mar. 15, 1972, Ser. No. 234,703
Claims priority, application Switzerland, Mar. 18, 1971, 4014/71
Int. Cl. B21d *37/16*
U.S. Cl. 72—269 2 Claims

The invention relates to a method and apparatus for extrusion of workpieces. Especially the invention is concerned with a method and apparatus for extruding workpieces whereby a

cooling medium is applied to transfer excessive heat from the apparatus in order to increase extrucion speed. The cooling



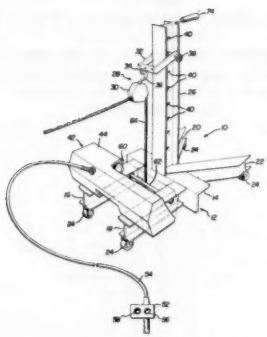
medium applied in a gaseous state is further used to create a protective atmosphere at the downstream end of the apparatus to eliminate the oxidizing effects of normal air.

3,808,866

AUTO FRAME PULLING APPARATUS

Omer E. Brabant, 1641 N. Andrews Ext., Fort Lauderdale, Fla.

Filed July 12, 1972, Ser. No. 271,073
Int. Cl. B21d *1/12*
U.S. Cl. 72—309 **6 Claims**



Apparatus for pulling an auto frame to straighten the same including an electrical winch having a drum with a line wound on it, a reversible electrical motor for rotating the drum to wind and unwind the line, and electrical control means having forward and reverse controls for operating the motor in forward and reverse directions. The electrical winch is mounted on a base, and a post extends generally upward from the base for retaining the line. The line passes through a pulley mounted on the post for guiding the line to an auto frame to be pulled for straightening purposes. The pulley is adjustable vertically up and down the post.

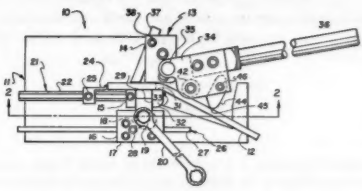
3,808,867

PORTABLE ROD OR TRUE BENDER

Bernhard Becker, 69 W. Saddle River Rd., Saddle River, N.J.

Filed May 25, 1971, Ser. No. 146,727
Int. Cl. B21d *11/04*; B21c *51/00*
U.S. Cl. 72—321 **8 Claims**

A portable rod bending machine for vise mounted operation with capacity for producing closely spaced mutiple bends in heavy rod stock having a rod clamping section with a fixed jaw, a movable jaw, and a quick acting cam lock. A force application member provides a rotatable bending die to reduce friction against the rod stock. Positional and angle indexing



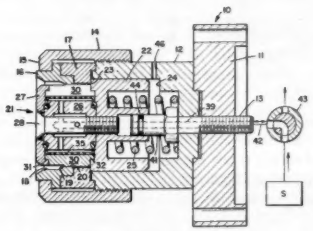
members provide accurate reproduction of bends. Two auxiliary brace members provide additional leverage for the heavy rod stock. A high ratio of bending torque to total weight is achieved by the invention.

3,808,868

PILOT CONSTRUCTION FOR NECKING DIE ASSEMBLY

Wayne F. Wolfe, Belmont, Calif., assignor to United Can Company, Haywood, Calif.

Filed Jan. 4, 1973, Ser. No. 320,895
Int. Cl. B21d *41/04*
U.S. Cl. 72—353 **6 Claims**



An annular die member and internal pilot for forming a reduced-diameter cylindrical neck on the end of a cylindrical can body having a side lap, wherein no orientation of the lap relative to the die assembly is required. The pilot is longitudinally segmented and the segments are each resiliently biased outwardly so that the segment or segments adjacent the lap may yield inwardly to accommodate the lap while the other segments provide a full circumferential support to the can body end. The pilot is axially movable relative to the annular die member as a can body end is inserted into the die assembly so that there is no relative movement between the pilot segments and can body as would otherwise cause scratching of the interior of the can body.

3,808,869

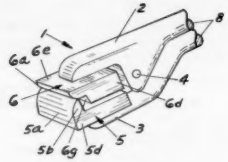
FLANGING DEVICE

Edwin Stanley Raymond, 111 Garfield St., Longview, Tex.

Filed May 16, 1972, Ser. No. 253,899
Int. Cl. B21d *37/12*
U.S. Cl. 72—409 **6 Claims**

A flanging device for selectively bending the edges of quarter panels and other sheet metal parts in the manufacture and repair of automobile bodies which includes pliers adapted to receive a pair of flanging dies, one of which is attached to

the upper jaw of the pliers and the other of which is attached to the lower jaw. The flanging dies are adapted to register with



each other to cause a piece of sheet metal being clamped between the dies to be flanged at a selectively desired angle and depth.

3,808,870

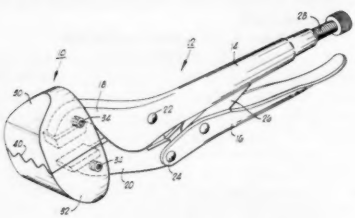
PIPE CRIMPING ATTACHMENT

Thomas B. Blancett, 1416 N.W. 106 St., Oklahoma City, Okla.

Filed June 1, 1972, Ser. No. 258,656

Int. Cl. B21d *37/12*

U.S. Cl. 72—413 **3 Claims**



An attachment device for affixure on standard vise grip pliers to form a sheet metal crimping tool. The device consists of a pair of identical jaw lugs each having similar longitudinal land and groove configurations formed therein. The jaw lugs are secured to each of the upper and lower jaw of the vise grip plier in alignment such that the land and groove formations close in mating engagement to effect longitudinal, corrugated crimping of a sheet metal object upon application of pressure.

3,808,871

DEVICE FOR THE LATERAL ADJUSTMENT AND ADJUSTMENT IN HEIGHT OF THE RAM BEARER ON PRESSES FOR NONCUTTING METAL SHAPING

Hans Richner, Basel, Switzerland, assignor to F. B. Hatebur AG, Basel, Switzerland

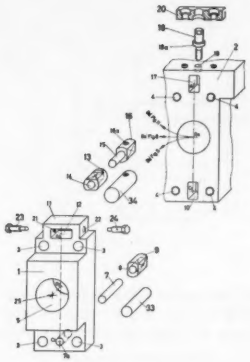
Filed Nov. 3, 1971, Ser. No. 195,137

Claims priority, application Germany, Nov. 3, 1970, 2053930

Int. Cl. B21j *13/02*

U.S. Cl. 72—447 **16 Claims**

Apparatus is disclosed for positioning a ram bearer in relation to a press slide. A first guide means is located on a first terminal section of a ram bearer and a second guide means is located on a second terminal section opposite the first terminal section of the ram bearer. The first guide means is pivotally connected at one end thereof to the ram bearer and slidably connected at the other end thereof to the press slide. The second guide means is pivotally connected at one end thereof to the ram bearer and slidably connected at the other end thereof to the press slide. The slidably connected end of the first guide means is shiftable in a direction transverse to the axial direction of the ram. First adjusting means is provided for laterally fixing the pivotally connected end of the second guide means with respect to the ram bearer about the pivot connection of the first guide means. The slidably connected end of the second guide means is shiftable in a



direction transverse to the axial direction of the ram. Second adjusting means are provided for locating the slidable connections of the first and second guide means in a predetermined disposition on the press slide.

3,808,872

DEVICE IN PARTICULAR FOR DRAWING SHEET-METAL

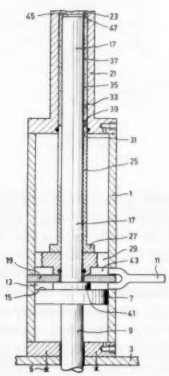
Johann Martin, Freiherr vom Steinstrasse 9, 6331 Oberbiel, Germany

Filed Nov. 20, 1972, Ser. No. 307,999

Claims priority, application Germany, Dec. 29, 1971, 2165252

Int. Cl. B21j *9/12*

U.S. Cl. 72—453 **6 Claims**



A device, in particular for drawing sheet metal, having a drawing die which is movable in a cylinder by means of a piston and which can be moved towards the workpiece by the action of a pressure medium on a face of the piston, in which the face of the piston which is influenced by the pressure medium in the supply direction comprises a pressure rod which is connected to the piston and on which a further piston having a shell which encloses the pressure rod in a sealing manner is axially movable, in which the shell guides the pressure rod at a distance above the piston in a sleeve which has a

smaller diameter than the cylinder and is closed at its end, the space in said sleeve being filled with a hydraulic liquid, the end of the shell having a smaller diameter exerting a hydraulically intensified pressure on the upper end of the pressure rod.

3,808,873

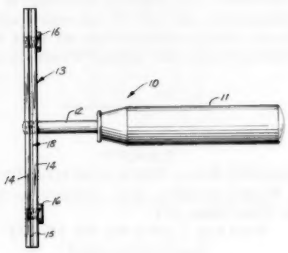
SIDING, JOINT AND END HAND BREAK

Edward J. Santhony, 2069 E. Tatham Rd., Saginaw, Mich.

Filed Nov. 27, 1972, Ser. No. 309,897

Int. Cl. B21j *13/02*

U.S. Cl. 72—479 **2 Claims**



A tool for manually bending material. This device consists primarily of a handle with a threaded shank portion being terminated by a pair of spaced bars, the bars serving as bending brake means for sheet metal.

3,808,874

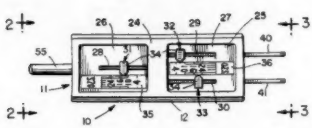
CONTACT TESTER

Tony Trevithick, Gurnee, Ill., assignor to Daniel Woodhead Inc., Northbrook, Ill.

Filed Oct. 26, 1972, Ser. No. 300,920

Int. Cl. G01n *19/02*

U.S. Cl. 73—9 **10 Claims**



Contact tester for determining frictional resistance against withdrawal from female contact members of electrical connectors or receptacles by male blades or pins of plugs embodying a housing having one or two, independently spring-biased blades projecting from one end of its housing, a spring-biased pin projecting from the other end, and indicia scale means on the housing with a pointer moved by extension of each respective blade and the pin for reading frictional resistance by the receptacle's female contacts against withdrawal of the blade or blades or the pin from the receptacle.

3,808,875

DENSITOMETER AND PROBE THEREFOR

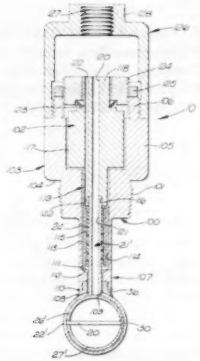
Charles Eveleigh Miller, Boulder, Colo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 24, 1972, Ser. No. 309,168

Int. Cl. G01n *9/00*

U.S. Cl. 73—32 **10 Claims**

A vibration densitometer comprising an electromechanical oscillator including a probe having a thin vane that is vibrated while submerged in a fluid by a magnetostrictive driver. A piezoelectric crystal mounted on the vane puts out an A.C. signal of a frequency equal to the resonant frequency of the vane, the oscillator feedback loop including an amplifier which feeds the driver coil with a signal having an A.C. component of a frequency $Af/2$ where A is one of the numbers 1 and 2. The loop provides an output signal of a frequency directly proportional to f which is fed to a linearization circuit that produces an output signal directly proportional to the density of the fluid. The linearization circuit output signal is



then impressed upon an indicator which, if desired, may be calibrated to read in density, which density is directly proportional to the magnitude of the linearization circuit output signal. The driver includes a magnetostrictive tube that is held in compression to vibrate the vane. The tube is held in compression by a Belleville spring. The spring provides at least four outstanding advantages. It decreases start-up time. It increases accuracy. It provides temperature compensation. It makes possible the use of a more durable housing metal.

3,808,876

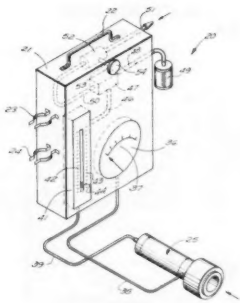
AIR PERMEABILITY TESTER

Thomas N. Kershaw, Aunt Park Lane, Newtown, Conn.

Filed Oct. 2, 1972, Ser. No. 294,199

Int. Cl. G01m *3/26*

U.S. Cl. 73—38 **12 Claims**



A portable air permeability testing device to directly register the permeability of a surface. The device includes a hollow probe with a passageway therethrough and one open end of the probe adapted to be placed proximal to a surface to be tested. A flow meter is connected to and is in fluid communi-

cation with the other open end of the probe. A static pressure probe is in communication with the interior of the hollow probe and is connected to a pressure gauge to measure the static pressure at a predetermined point in the interior of the hollow probe. Air flow control means are utilized to pass air through the surface to be tested, the hollow probe and the flow meter a predetermined rate to provide a desired static pressure within the hollow probe. In this manner, indicator means on the flow meter directly registers the permeability of the surface.

3,808,877

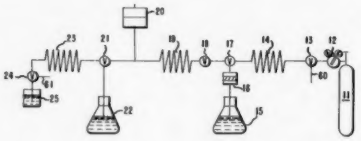
CAPILLARY VISCOMETER

David E. Blair, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 18, 1972, Ser. No. 290,069

Int. Cl. G01n *11/08*

U.S. Cl. 73—55 **22 Claims**



A method for measuring the viscosity of a liquid comprising the steps of filling a capillary tube with the liquid through the capillary tube using a constant flow rate source of a solvent for the liquid as the motive force, and measuring the pressure drop across the capillary tube as the liquid flows through it. In the preferred embodiment, the liquid is a solute in solution with the solvent and the relative viscosity of the solute is measured by measuring the pressure drop across the capillary tube as the solution flows through it and as a solvent flows through it or a similar capillary.

3,808,878

METHOD FOR SENSING THE DEPTH OF CELLULAR PITS FORMED IN A MATERIAL LAYER

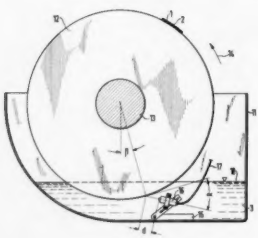
Mamiliano Dini, Munich, Germany, assignor to European Rotogravure Association, Munich, Germany

Filed Jan. 24, 1972, Ser. No. 219,991

Claims priority, application Germany, Mar. 19, 1971 2113351

Int. Cl. G01n *29/00*

U.S. Cl. 73—67.8 S **10 Claims**



A method is presented for sensing the depth of cells formed in a material layer preferably during the preparation of rotogravure cylinders by etching. The cells are formed in at least two regions of the surface of said material layer, and the cells have one of their sidewalls or a portion of one of their sidewalls extending at the same angle relative to the surface of said material layer. Each of the sidewalls or sidewall portions extending parallel to each other, all cells of any region having identical depths, and the cells of adjacent regions having different depths. The method of this invention includes scanning individually and successively said regions with a bundle of ultrasonic beams projected at an angle onto the surface of said material layer. The intensity of the partial bundle reflected parallel to the incident beam from the bottom and from the wall or wall portions of each cell of each respectively scanned region is measured. The measured intensities of said partial bundle reflected from the cells of said regions are then compared with the beams reflected from all other flat surfaces being ignored to measure the depth of the cells in each region.

3,808,879

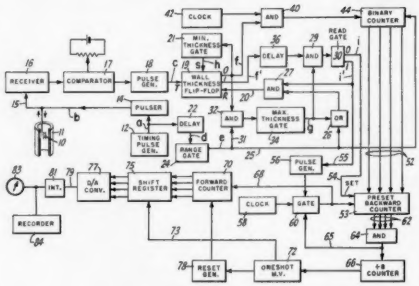
ULTRASONIC WALL THICKNESS MEASUREMENT

Philip A. Rogers, Houston, Tex., assignor to AMF Incorporated, White Plains, N.Y.

Filed Aug. 3, 1972, Ser. No. 277,732

Int. Cl. G01n *29/04*

U.S. Cl. 73—67.9 **13 Claims**



Method and apparatus for ultrasonic measurement of average wall thickness. Only true and accurate wall thickness measurements are averaged, and average thickness of wall is indicated in continuous, accurate manner. Invention is particularly useful where there is continuous relative motion with respect to measured wall, and where surface of wall is irregular.

3,808,880

APPARATUS FOR TESTING DIMENSIONAL VARIATIONS IN A TEST SPECIMEN

Irwin Berman, Upper Montclair; Robert Henschel, Lake Hiawatha; David H. Pai, Livingston; Charles F. Nash, Roseland; Anthony M. Mack, and Bernardino M. Alfano, both of Somerville, all of N.J., assignors to Foster Wheeler Corporation, Livingston, N.J.

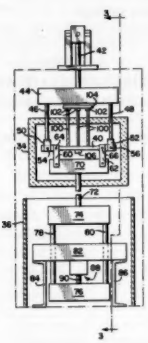
Filed Aug. 3, 1972, Ser. No. 277,850

Int. Cl. G01n *3/18*

U.S. Cl. 73—90 **8 Claims**

An apparatus for testing for dimensional variations in a test specimen wherein two equally and oppositely directed loads

are applied to the test specimen by a fulcrum lever, with any unbalances in the loads as a result of dimensional variations of



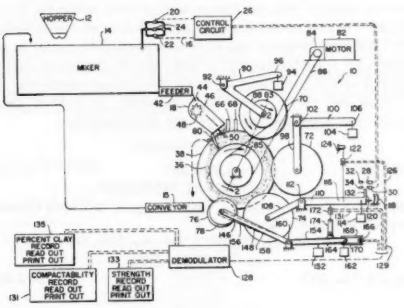
the specimen caused by the application of the loads being continuously corrected.

3,808,881

APPARATUS FOR AND METHOD OF GRANULAR MATERIAL TESTING

Harry W. Dietert, Kerrville, Tex., assignor to Harry W. Dietert Co., Detroit, Mich.

Filed June 8, 1972, Ser. No. 260,985
Int. Cl. G01n *33/24*
U.S. Cl. 73—93 **19 Claims**



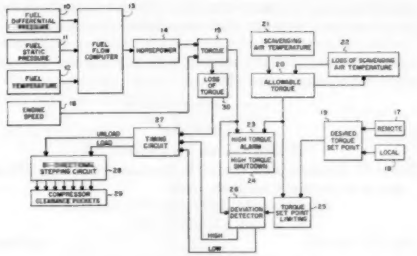
Apparatus for and method of determining the compactibility, strength and effective clay content of granular material such as foundry sand. Both rotary and linear apparatus modifications for continuously determining the compactibility, strength and effective clay content of the foundry sand is specifically disclosed along with novel sample feed structure, foundry sand strength determining structure, and structure for determining the effective clay content of foundry sand from compactibility and strength information, including cam discs constructed in accordance with the relation between the compactibility and the effective clay content of the granular material and in accordance with the relation between the strength of the granular material and the effective clay content thereof. Apparatus for and method of conditioning foundry sand and for directing conditioned foundry sand into automatic molding machines in accordance with one of the determined compactibility, strength and effective clay content is also disclosed.

3,808,882

ENGINE TORQUE CONTROL SYSTEM

Charles F. Nick, and Morris J. Davidson, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed July 21, 1971, Ser. No. 164,555
Int. Cl. G01m *15/00*
U.S. Cl. 73—117.3 **9 Claims**



The engine horsepower is computed as a function of the engine fuel flow rate and the engine torque is derived by the division of the horsepower signal by a signal functionally related to the engine speed. The actual torque of the engine is compared to a torque set point and upon a given deviation from the set point, corrective signals are actuated to return the actual torque to its set point. Upon too great a deviation, an alarm is actuated and the engine is completely unloaded. When used with ambient up-rated engines, a temperature signal representing engine capability is used to limit the torque set point to its maximum allowable setting. Upon loss of the signal representing engine capability, the allowable torque is reduced as though there were no up-rating of the engine.

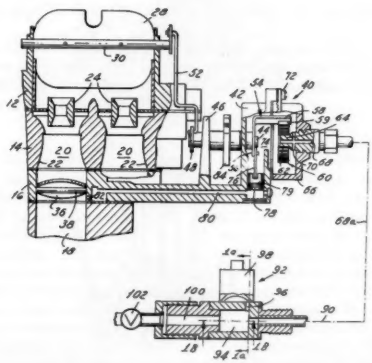
The fuel flow computer utilizes signals from the differential pressure of the fuel, the static pressure of the fuel and the temperature of the fuel to produce a signal indicative of the square root of the product of the two pressure parameters divided by a signal functionally related to the fuel temperature.

3,808,883

AUTOMATIC CHOKE TESTING METHOD

James R. Hughes, Windsor, Ontario, Canada, and John H. St. John, Birmingham, Mich., assignors to Ford Motor Company, Dearborn, Mich.

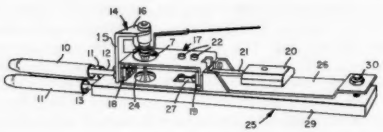
Filed Nov. 3, 1972, Ser. No. 303,557
Int. Cl. G01m *15/00*
U.S. Cl. 73—118 **7 Claims**



A vortex generator is connected to the automatic choke thermostatic spring housing in place of the usual exhaust

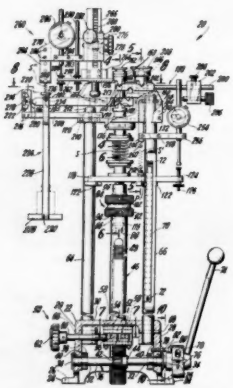
manifold heat riser tube, which is disconnected for the first portion of the test. The generator supplies very cold air to the choke housing to immediately simulate cold weather operation and rotate the choke and cooperating operating mechanism to a closed position. The cold source of air is then disconnected and either the hot source of air from the vortex generator then applied to open the choke, at which time the operation can be checked, or the choke is permitted to warm under the prevailing ambient temperature conditions. The simulated cold weather warm-up operation permits an accurate check of operation of all the choke components, that is, the fast idle cam, dechoke and piston pulldown mechanisms, and correlation of choke opening with winding and unwinding of the thermostatic choke coil.

3,808,884
MECHANICAL TRANSDUCER
Erwin W. Graham, and Wayne B. Graham, both of 1210 Camden Ave., both of Campbell, Calif.
Filed Mar. 22, 1973, Ser. No. 343,828
Int. Cl. G01l *5/06*
U.S. Cl. 73—144 **16 Claims**



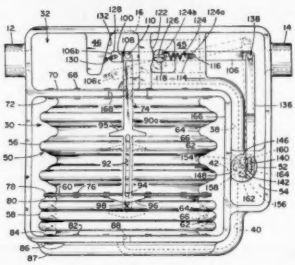
This invention relates to a device for translating small scale linear motion into discernible rotary motion by untwisting a pair of relatively inelastic twisted bands and, more particularly, relates to a mechanical transducer useful, for example, in a device for measuring the tension in a thin strip of material such as a continuous moving strip of magnetic tape.

3,808,885
SPRING TESTER
Harold C. R. Carlson, 611B Lake Point Dr., Lakewood, N.J.
Filed July 19, 1972, Ser. No. 273,116
Int. Cl. G01l *1/04*
U.S. Cl. 73—161 **28 Claims**



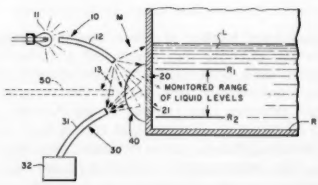
A multi-function spring tester is provided for testing the compression and extension loads, deflections and rates of springs. A balance beam system is used for test purposes and permits production testing of both light (1 gram to 1,000 grams) and heavy (up to 200 pounds) loads. Position locks and production stops are provided for rapid testing purposes of both light and heavy springs.

3,808,886
VOLUMETRIC FLOW METER
Fred L. Goldsberry, Dallas, Tex., assignor to Lone Star Gas Company, Dallas, Tex.
Filed Sept. 25, 1972, Ser. No. 292,111
Int. Cl. G01f *3/20*
U.S. Cl. 73—264 **15 Claims**



A volumetric flow meter for measuring volumetric flow of fluids such as natural gas is provided which includes a bellows assembly having a pair of axially aligned reciprocally cooperating bellows members which alternately receive and exhaust fluid flow passing through the meter in a manner such that the expanding or inlet bellows receiving the gas flow causes positive displacement and contraction of the outlet bellows to exhaust gas therefrom; and a valve assembly is provided for reversing the function of the inlet and outlet bellows after the inlet bellows has fully extended. The meter is provided with a digital counter which records each complete expansion and contraction cycle of the bellows assembly. The valve in the valve assembly is actuated by a snap switch mechanism having a positive no-jam configuration.

3,808,887
LIQUID LEVEL MONITOR
Albert T. Buttriss, Westlake, Ohio, assignor to Eaton Corporation, Cleveland, Ohio
Filed Feb. 29, 1972, Ser. No. 230,276
Int. Cl. G01f *23/00*
U.S. Cl. 73—293 **20 Claims**



A liquid level monitor for monitoring the level of liquids in a remote or shielded container and providing a signal proportional to any one of an infinite number of levels within a given range. The monitor has a sheet sealingly engaging an aperture in the container which extends vertically over the range of levels to be monitored. An external light source provides light which shines upon the light transmitting material. An external lens may be used to direct any light reflected by the light trans-

mitting material, the intensity of which will be inversely proportional to liquid level, to a light receiving station. The light received at the receiving station is then conducted, preferably by means of fiber optics, to a remote monitoring station. The monitoring station may be a visual display or may convert the light received into a signal, proportional to intensity, for use by an indicating or controlling device. The level of liquid in the container and changes thereto may also be used to monitor the stability of the device to which the container is mounted.

3,808,888

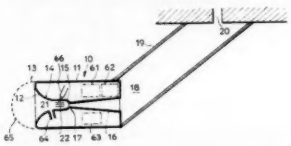
HYGROMETER

Michel Jean Chatanier, 105 Rue Ledru-Rollin, 94-Saint-Maur; Jacky Robert Leynaert, 11 Avenue du President-Kennedy, 91-Igny, and Alain Roger Thirlot, 6 Allee Jean-Mermoz, 92-Chatenay-Malabry, all of France

Filed Oct. 4, 1971, Ser. No. 188,684

Int. Cl. G01n *25/56*

U.S. Cl. 73—336.5 **8 Claims**



An apparatus for measuring the degree of humidity of a gas which comprises a channel with a sonic neck or throat for the circulation of a stream of gas. An electrical condenser with condenser plates is located in the gas stream in the vicinity of the neck and an electrical measuring device is connected to the condenser to derive therefrom the degree of humidity of the flowing gas bathing the condenser plates.

3,808,889

HEAT FLOW TRANSDUCER FOR THERMAL SURVEYS

Donald E. Rawson, RFD 147; Norman D. Greene, RFD 148, both of Del Mar, Calif., and H. Wayne Hoylman, 2234 Loma Vista St., Pasadena, all of Calif.

Filed Oct. 5, 1972, Ser. No. 295,368

Int. Cl. E21b *49/00*

U.S. Cl. 73—154 **10 Claims**

Heat flow transducer for use in measuring the geothermal heat flow in the earth. The transducer utilizes copper alloy flexible wire bundles at opposite ends of an elongated body to conduct heat from the strata surrounding a bore hole, into the body of the transducer, and through thermally conductive elements, into contact with a solid state thermopile. The thermopile includes a plurality of semi-conductor elements, electrically in series and thermally in parallel, to produce a usable electrical output at very low heat flows. Multiple modules of semi-conductor elements are employed. The modules are separated by a heat conductive, but electrically insulated layer between modules.

3,808,890

PRESSURE TRANSMITTING DEVICE

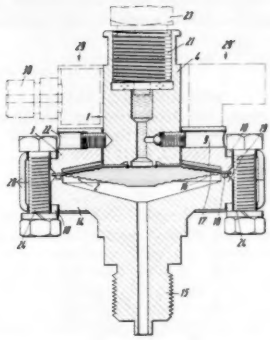
Gerhard Neugebauer, Trennfurth, Germany, assignor to Alexander Wiegand Armaturen- und Manometerfabrik, Main, Germany

Filed Oct. 12, 1972, Ser. No. 296,830

Claims priority, application Germany, Oct. 14, 1971, 2151226; Sept. 9, 1972, 2244292

Int. Cl. G01l *7/08*

U.S. Cl. 73—406 **10 Claims**



A pressure transmitting device is disclosed having a member which defines a passage for the transmission of fluid pressure and a diaphragm associated with the passage defining member. There is also provided an annular securing member for securing said passage-defining member directly or indirectly to an apparatus containing fluid whose pressure is to be measured in such manner that the pressure of said fluid is applied to said diaphragm. The diaphragm is sealingly secured directly to the passage-defining member, and the securing member is detachably engageable over the said passage-defining member to secure the latter to fluid-containing apparatus.

3,808,891

APPARATUS FOR OPERATING A PRESSURE GAUGE OR THE LIKE

Peter D. Dieterich, 267 Cedarbrook Rd., Boulder, Colo.; William H. Eiszner, Jr., Holland, Mich., and John P. Locke, Michigan City, Ind., assignors to said Dieterich, by said Locke und Eiszner

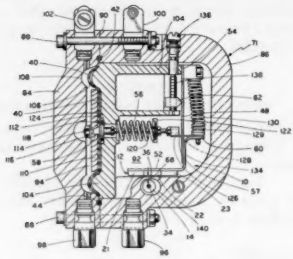
Filed June 6, 1972, Ser. No. 260,187

Int. Cl. G01l *7/08*

U.S. Cl. 73—407 R **38 Claims**

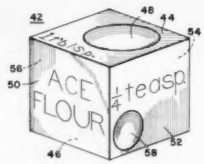
A mechanism for operating an instrument such as, for example, a gauge primarily for measuring pressure having a diaphragm the opposite faces of which are subject to a pressure differential so that the center moves in response to such differential. The diaphragm movement is transmitted to an array of bar magnets that moves in a substantially rectilinear translative movement in response to diaphragm movement. A rotary magnet spaced from the path of movement of the array of bar magnets and within the composite magnetic field produced by the array rotates as the array is translated, the angular rotation being a predetermined mathematical or empirical function of the amount of translation and built into the array. The mathematical function is achieved by proper choice of magnet dimensions and placement thereof relative to one

another. Rotation of the rotor is used to drive a pointer indicator over a scale to indicate pressure. The invention resides



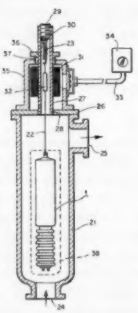
primarily in the transductive mechanism and the novel transmission of the movement to a rotor for driving the said pointer indicator.

3,808,892
MEASURING DEVICE
Garfield G. Litton, 1360 Ocean Parkway, Brooklyn, N.Y.
Filed Dec. 3, 1971, Ser. No. 204,563
Int. Cl. G01f *19/00*
U.S. Cl. 73—427 **3 Claims**



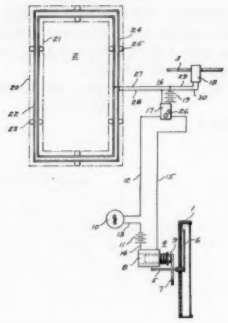
A measuring device having flat connected sides with depressions formed therein. Each depression corresponds to a different measuring volume such as a tablespoon or a teaspoon, and the measuring device can be provided in either solid or hollow form.

3,808,893
DENSIMETER
Sigeru Jinno, Otsu, and Mitsuo Uchida, Osaka, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Filed July 27, 1972, Ser. No. 275,748
Claims priority, application Japan, July 30, 1971, 46-56793
Int. Cl. G01n *9/10*
U.S. Cl. 73—452 **8 Claims**



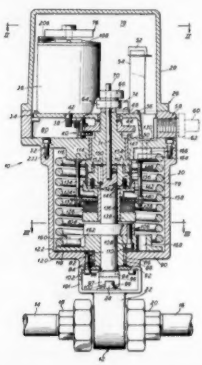
A float type densimeter having a float which has a chamber filled with standard fluid. The coefficients of cubical expansion of the float and the sample fluid are the same. The buoyancy of the float in the sample fluid is detected.

3,808,894
SPEEDOMETER LOCKING DEVICE
Len Saucier, New Westminster, British Columbia, Canada, assignor to Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Jan. 10, 1973, Ser. No. 322,533
Int. Cl. G01p *3/00, 1/10*
U.S. Cl. 73—491 **3 Claims**



A speedometer locking device for locking the speedometer of a vehicle on impact comprises a position locking device for locking the speedometer in position. An actuating device connected to the position locking device operates the position locking device to lock the speedometer in position upon impact of the vehicle on extraordinary application of brake pressure.

3,808,895
ELECTRIC FAIL-SAFE ACTUATOR
John Herman Fitzwater, Warwick, R.I.
Filed Feb. 9, 1973, Ser. No. 331,191
Int. Cl. G05g *17/00*
U.S. Cl. 74—2 **31 Claims**



An electrically operated fail-safe valve actuator employs a spring which is wound to store energy during operation of the electric drive motor, an electric clutch operable to disengage the drive motor from the actuator output shaft in response to loss of power from the electrical supply whereby the spring drives the valve in the opposite direction.

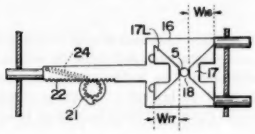
ERRATUM

For Class 74—339 see:
Patent No. 3,808,738

3,808,896
PRESET DEVICE OF UHF TUNER

Shoji Ogasaware, and Teruzo Tamate, both of Tokyo, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Sept. 1, 1971, Ser. No. 177,080
Claims priority, application Japan, Sept. 7, 1970, 45-78629; Sept. 8, 1970, 45-89713
Int. Cl. F16h *35/18*; H03j *1/06*
U.S. Cl. 74—10.6 **2 Claims**

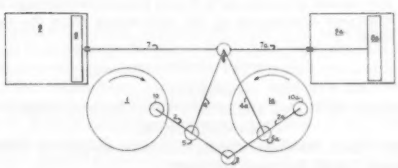


A preset device of a UHF tuner having a plurality of fine adjusting screws mounted on a fine adjusting shaft at the outer periphery of a rotary drum mounted on a channel switching main shaft to be turned selectively in communication with the adjusting shaft in operation, has a plurality of memory slugs screwed to the fine adjusting screws and movable in axial direction along fine adjusting shaft upon the rotation of the fine adjusting screws. A slider disposed on the moving surface of the memory slugs moves fine adjusting elements such as variable condensers when moved by the memory slugs cammed to the fine adjusting position by the operation of the channel switching main shaft. The slider comprises two angular cams facing at their respective top centers a memory slug fixed therebetween and inserted into a slit formed on the slider to control its disposition for moving the slider in contact with the memory slugs.

3,808,897
CRANK SYSTEM

John Raymond Ohma, 116 Curry St., Merewether, N.S.W., Australia (2291)

Filed Nov. 10, 1972, Ser. No. 305,528
Claims priority, application Australia, Nov. 17, 1971, 7067/71
Int. Cl. F16h *21/22*
U.S. Cl. 74—44 **3 Claims**

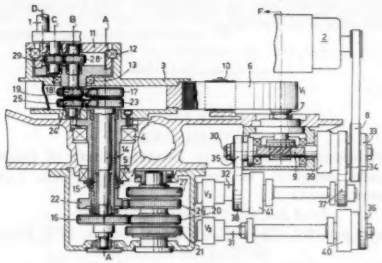


A crank system comprising two parallel, interconnected and inwardly contra-rotatable crankshafts, the arrangement being such that rotation of the crankshafts reciprocates the piston rods in a straight line at right angles to the plane of the axis of rotation of the crankshaft.

3,808,898
MECHANICAL MOVING STRUCTURE FOR AN X-RAY APPARATUS

Serge Rouge, 33, Villa de la Republique, 92 Montrouge (Hauts de Seine), and Jacques Lebra, 29, Rue Lazare Carnot, 92 Colombes (Hauts de Seine), both of France

Filed July 18, 1972, Ser. No. 272,782
Claims priority, application France, July 29, 1971, 7127804
Int. Cl. F16h *35/16*
U.S. Cl. 74—86 **5 Claims**

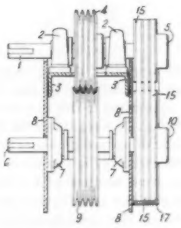


A mechanical moving device for displacement of an X-ray tube and a carrier for X-rays sensitive material in opposite directions along adjustable paths about a support, arranged between the X-ray tube and the carrier by means of a driving member which is rotatable, via a tripartite arm, about a stationary shaft, the individual parts thereof being arranged to the rotatable by means of connection shafts, the driving of the rotatable parts being controlled by the actuation or switching off of coupling members.

3,808,899
TRANSMISSION UNIT

Edward Frank Cooper, 2 Penning Rd., Milford, Auckland, New Zealand

Filed Sept. 13, 1972, Ser. No. 288,710
Claims priority, application New Zealand, Sept. 17, 1971, 164897
Int. Cl. F16h *15/00*
U.S. Cl. 74—203 **3 Claims**



This invention relates to a transmission unit comprising at least two substantially parallel shafts at least one of which is adjustably mounted so as to enable the spacing between the shafts to be varied, at least one continuous belt being provided

and being operable about pulleys attached to the shafts; each of the shafts mounted at least one drive wheel, movable guard members being positioned substantially laterally of the belt, at least one of the parallel shafts being a driving shaft and being adapted to have power imparted thereto from a prime mover, at least one other shaft being a driven shaft, the unit being characterized in that the belt and pulleys provide a forward drive from the driving shaft to the driven shaft, a lessening of the spacing between the shafts causing the drive wheels to contact and to thus provide a reverse drive, at least the adjustably mounted shaft enabling a neutral condition in which the shafts are disconnected one from the other, the guard members being provided around the periphery of the drive belt so that the belt may be restrained or held free during the use of reverse or neutral drive.

3,808,900

DRIVE SHEAVE

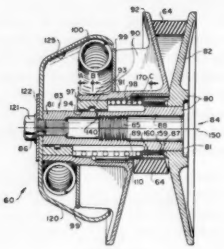
Leo Vadeboncoeur, and Alain Tremblay, both of Quebec, Canada, assignors to Jarry Precision Limited, Laval, Quebec, Canada

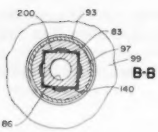
Filed Jan. 8, 1973, Ser. No. 321,658

Claims priority, application Canada, Nov. 9, 1972, 156,247

Int. Cl. F16h *55/52*

U.S. Cl. 74—230.17 E **6 Claims**





In a drive sheave an improved sliding connection between the fixed assembly which is secured to the driving shaft and the slidable assembly supported to the free end of the hub portion of the fixed assembly. The region of the free end portion of the fixed hub is made of square cross-section while the hub portion of the slidable assembly is provided with an opening corresponding to the cross section of the fixed hub but of slightly larger dimensions. An anti-friction and wear resistant insert is disposed between the corresponding sliding surfaces of the two hubs and is secured to the slidable assembly so as to move therewith along the free end portion of the fixed hub. For better supporting the slidable assembly onto the fixed assembly, a ring member is provided on the hub of the fixed assembly adjacent the fixed flange for slidably engaging a correspondingly shaped bore in the center of the hub portion of the slidable assembly.

3,808,901

TRANSMISSION BELT

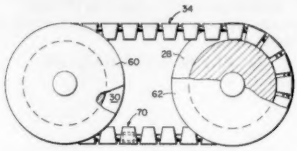
Winfred M. Berg, 89 Grant Ave., East Rockaway, N.Y.

Filed Aug. 2, 1972, Ser. No. 277,166

Claims priority, application Great Britain, Aug. 17, 1971, 38463/71

Int. Cl. F16g *1/28, 5/10*

U.S. Cl. 74—231 C **24 Claims**



A flexible transmission belt usable with V-belt pulleys comprising at least one plastic covered cable on which a series of V-blocks are positioned. The V-blocks may have a wing-like cross section as well as lateral connecting struts, and the material of the cable cover and the blocks may be integral.

3,808,902

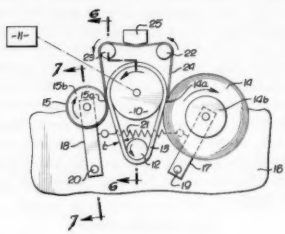
RADIAL DIFFERENTIAL TAPE DRIVE

Frederic F. Grant, 14505 Eastbrook, Bellflower, Calif.

Filed Oct. 27, 1972, Ser. No. 301,527

Int. Cl. F16h *7/00*

U.S. Cl. 74—227 **10 Claims**



In a tape transport assembly, the combination comprising

a. a pair of carriers for tape to be transported from a supply roll on one carrier to a take-up roll on the other carrier,

b. belt means located to pressurally engage the tape rolls as the respective carriers for effecting rotation of the rolls on the carriers in order to accomplish said transport, and

c. rotary drive means to drive the belt means at velocities proximate the loci of engagement with the tape rolls characterized in that the tape extent undergoing transportation between the supply roll and the take-up roll is maintained in tension, the drive means located to receive application of compressive forces transmitted through the thickness dimensions of the belt means from the tape rolls.

3,808,903

GEAR SHIFTING ASSEMBLY FOR CHANGE SPEED TRANSMISSIONS

Joseph Sauer, Schwieberdingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Sept. 8, 1972, Ser. No. 287,429

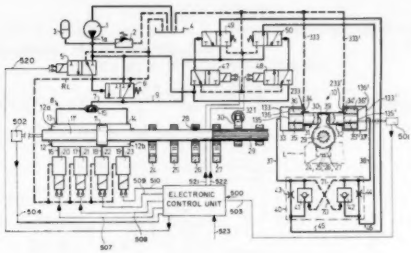
Claims priority, application Germany, Sept. 13, 1971, 21456677

Int. Cl. F16h *5/06;* **F01b** *9/00*

U.S. Cl. 74—335 **10 Claims**

A gear shifting assembly for changing the speed positions of a transmission in an automotive vehicle has a hydraulic gear

selector motor whose piston rod is normal to the piston rod of a hydraulic gear shifting motor. The cylinder of the gear shifting motor has two chambers one of which receives pressurized fluid to engage a selected gear and the other of which receives pressurized fluid to disengage a gear. The flow of fluid to and from the two chambers is controlled by a twin check valve



which has two discrete one-way valves, one for each chamber and two flow restrictors each connected in parallel with a different one-way valve. When the pressure of fluid in one of the chambers rises to a preselected value, the corresponding one-way valve opens the other one-way valve to allow for practically unimpeded flow of fluid from the other chamber.

3,808,904

PORTABLE ELECTRIC IMPACT TOOL

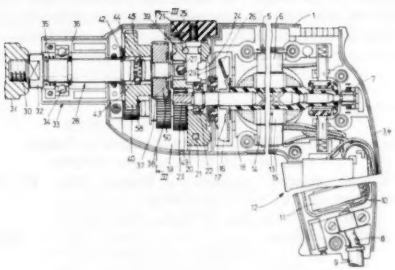
Dieter Gotsch, Plattenhardt; Reinhard Hahner, Stuttgart; Manfred Kirn, Stuttgart, and Hans Lederer, Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 1, 1972, Ser. No. 302,751

Claims priority, application Germany, Nov. 2, 1971, 7141263

Int. Cl. F16h *3/32*

U.S. Cl. 74—343 **5 Claims**



A portable electric impact drill, wrench or an analogous power tool wherein the motor shaft drives the intermediate shaft of a two-speed transmission which rotates the tool spindle. The transmission has a first gear rigid with the intermediate shaft and meshing with a second gear which is rotatable on the tool spindle but can drive the spindle by way of an overrunning clutch when the spindle is to rotate at the lower of two speeds. A third gear which is rigid with the spindle meshes with a fourth gear which is rotatable and axially movable on the intermediate shaft. The latter has a transverse bore for two balls which are biased apart by a helical spring to bear against the internal surface of the fourth gear. This fourth gear has an axial bore including a larger-diameter portion which receives portions of the balls in one axial position of the fourth gear whereby the intermediate shaft can rotate relative to the fourth gear to drive the spindle by way of the first and second gears and the overrunning clutch. A smaller-diameter portion of the axial bore in the fourth gear communicates with two axially parallel grooves which receive portions of the balls in a second axial position of the fourth gear whereby the latter drives the spindle by way of the third gear. The overrunning clutch then enables the spindle to rotate relative to the second gear.

3,808,905

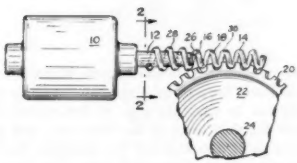
WORM DRIVE FOR ELECTRICALLY WOUND CLOCK

Leonard L. Metzinger, Delavan, Wis., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Sept. 29, 1972, Ser. No. 293,319

Int. Cl. F16h *1/16*

U.S. Cl. 74—425 **5 Claims**



For an electrically wound clock, a worm and worm gear drive, wherein the worm is a space-wound helical wire spring, frictionally fitted on a motor shaft, extending beyond the end of the shaft, and unsupported at its outboard end. Engagement with the worm gear takes place at a point beyond the end of the shaft.

3,808,906

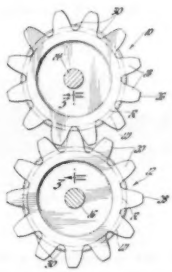
GEARING WITH VIBRATION DAMPING MEANS

George L. Bowers, Mooresville, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 21, 1972, Ser. No. 246,163

Int. Cl. F16h *55/14*

U.S. Cl. 74—443 **2 Claims**



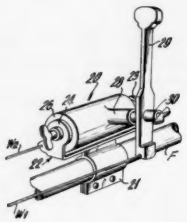
Meshing gears are provided with elastomeric inserts secured in the roots of the gear teeth. The inserts are serially contacted and deflected by the tips of the gear teeth as the gears rotate to damp gear vibrations resulting from gearing impulses that occur at a base frequency proportional to the number of gear teeth and the gear speed.

3,808,907

SHIFT LEVER DEVICE FOR SPEED CHANGE GEAR TRANSMISSION TRAIN OF A BICYCLE

Eikichi Yamaguchi, 3-14-2 Nakamegun, Meguro-ku, Tokyo, Japan

Filed June 9, 1972, Ser. No. 261,296
Int. Cl. G05g 9/02
U.S. Cl. 74—471 XY 4 Claims



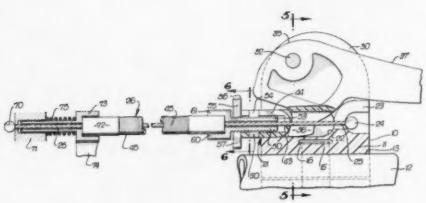
A shift lever is mounted on the bicycle frame for pivoting about a first axis and for angular displacement about a second axis perpendicular to the first axis. A first speed changing cable connects the shift lever to the first train, and a second speed changing cable is connected to a member displaceable by angular displacement of the shift lever. The first cable is connected to an end of the shift lever so that it is displaced linearly upon pivoting of the shift lever about the first axis. Angular displacement of the shift lever effects rotation of a drum or gear which, in turn, effects linear displacement of the second cable. Conjoint pivoting of the shift lever and angular displacement thereof effects simultaneous linear displacement of both speed changing cables.

3,808,908

CONTROL LEVER ASSEMBLY

Herbert Guerr, 2128 W. 23rd St., Torrance, Calif.

Filed Mar. 30, 1973, Ser. No. 346,611
Int. Cl. G05g 11/00
U.S. Cl. 74—489 2 Claims



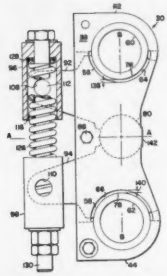
A control lever unit is removably mounted on the handle bars of a motorcycle, bicycle or the like. The frame of the unit is provided with a slideway in which a slide is longitudinally movable by a bifurcate spur depending from a lever pivoted in the frame. The wire of a Bowden cable assembly passes through a central opening in the slide and between the bifurcations of the lever spur to an anchorage in the frame, while the slide itself engages the tube of the Bowden cable assembly to effect movement of it and thus move the remote device to be controlled, such as the clutch or brake of the vehicle.

3,808,909

COLLAPSIBLE LINK FOR A TREE SHEAR

Earl Clinton Johnson, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Apr. 4, 1973, Ser. No. 347,838
Int. Cl. G05g 1/00
U.S. Cl. 74—585 10 Claims



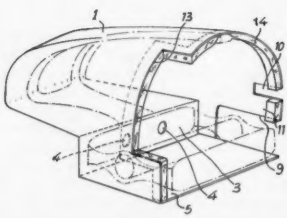
A tree shear includes a pair of cutting blades which are respectively carried by a pair of blade support arms that are mounted for pivotal movement towards and away from each other about an axis which extends horizontally when the tree shear is level. Mounted for movement about respective axes which extend parallel to the axis of movement of the blade support arms are a pair of crankshafts that are located above and spaced equidistant from the pivotal axis of the blade support arms. A pair of force-transmitting links are respectively pivotally interconnected between the pair of crankshafts and the pair of blade support arms and a hydraulic actuator is located between and is pivotally interconnected with the pair of crankshafts and is selectively extensible and retractable to move the crankshafts about their respective pivot axes. The force-transmitting links are collapsible and are designed to transmit a cutting force to the cutting blades as long as the compressive forces therein are below a predetermined amount. If the forces rise above this predetermined amount, the link will collapse and permit the hydraulic actuator to finish its stroke without further transmittal of force to that blade associated with the link which collapsed.

3,808,910

FOOT SHIELD FOR CYCLISTS

Roger J. Desbois, 108 rue Chevreul, Nanterre, France

Filed Nov. 24, 1972, Ser. No. 309,595
Claims priority, application France, Dec. 17, 1971, 71.45434; Oct. 23, 1972, 72.37440
Int. Cl. B62m 3/08
U.S. Cl. 74—594.6 9 Claims



For use with bicycle pedals provided with apertures on end faces for fastening toe-clips thereto, a foot shield comprising a casing for covering the top of the toe of the foot when

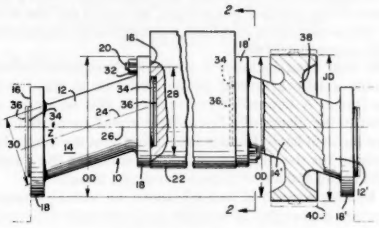
disposed on the pedal, and having beneath the bottom face of the shield a wall perpendicular to said face and of dimensions substantially equal to those of the pedal end face, the wall having apertures corresponding with the toe-clips fastening apertures in the pedal end face.

3,808,911

COUPLING MEANS

Arthur L. Black, Corning, N.Y., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Aug. 1, 1973, Ser. No. 384,448
Int. Cl. F16c *3/12*
U.S. Cl. 74—597 **9 Claims**



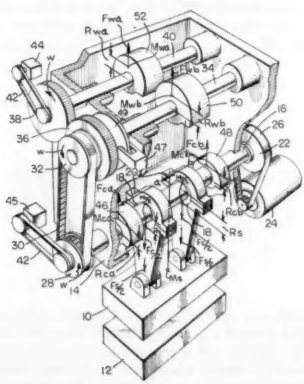
The means comprises a shaft having parallel mounting faces at opposite ends thereof for coupling eccentrically-rotatable elements for rotation about a common axis, wherein the body of the shaft has a longitudinal centerline which lies oblique to the common axis. The shaft has mounting flanges at each end which have rotatable element mounting bolt holes formed therein defining a bolt hole circle of a diameter which is between one-fourth and one-third larger than the nominal diameter of the shaft body.

3,808,912

ARRANGEMENT FOR DYNAMIC BALANCING OF A MECHANICAL PRESS, ESPECIALLY A HIGH SPEED MECHANICAL PRESS

John E. Voorhees, Sidney, and Robert L. Schockman, St. Henry, both of Ohio, assignors to The Minster Machine Corporation Company, Minster, Ohio

Filed Nov. 21, 1972, Ser. No. 308,531
Int. Cl. F16f *15/22*
U.S. Cl. 74—604 **13 Claims**



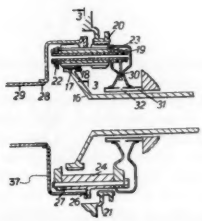
A high speed mechanical press having a crankshaft, or two crankshafts, with a reciprocating slide driven thereby, and with off center masses in the press movable in unison with the press slide for counterbalancing the inertia forces developed by the reciprocating components of the press and the centrifugal forces developed on the crankshaft, or crankshafts, by off center masses acting thereon at the throw portions thereof.

3,808,913

EPICYCLIC GEAR TRAIN

Ronald Albert Gilbert, Allestree; James Alexander Petrie, Littleover, and Kenneth Edward George Bracey, Findern, all of England, assignors to Rolls-Royce (1971) Limited, London, England

Filed Aug. 4, 1972, Ser. No. 278,027
Claims priority, application Great Britain, Aug. 11, 1971, 37687/71
Int. Cl. F16h *1/28*
U.S. Cl. 74—801 **7 Claims**



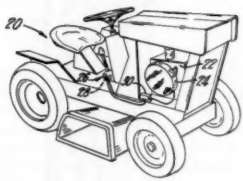
An epicyclic gear train comprising a sun gear, a plurality of planet gears meshing with the sun gear and carried from a carrier rotatable about the sun gear axis, and an annulus gear conical with the sun gear and meshing with the planet gears, each of the gears having single helical teeth and the sun and annulus gears being axially displaced to reduce the tipping couple on the planet gears, drive being taken from or to the planet carrier solely on a plane or planes perpendicular to the rotational axis of the carrier and lying between the engagements between the planet gears and the sun gear, and the planet gears.

3,808,914

ENGINE AND TRANSMISSION WITH SAFETY SYSTEM

Hans Hauser, Fredericktown, Ohio, assignor to The J. B. Foote Foundry Co., Fredericktown, Ohio

Division of Ser. No. 136,510, April 22, 1971, Pat. No. 3,747,437. This application Feb. 5, 1973, Ser. No. 329,435
Int. Cl. B60k *27/08*; **F02n** *17/00*
U.S. Cl. 74—850 **5 Claims**



This invention relates to an engine and a transmission with a safety system to prevent operation of the engine if the transmission is in gear. The system is designed so that a switch operated by shift means of the transmission is closed when the transmission is in neutral and open when it is in gear. The engine is prevented from starting whenever the switch is in the open position. The switch is preferably mounted in the transmission housing so as to be precisely located with respect to

the shift mechanism and thereby assure that the position of the switch is reliably coordinated with the shift mechanism and the position of the transmission. By mounting the switch within the transmission housing, it is also protected from dirt and physical damage and does not interfere with the operator.

3,808,915

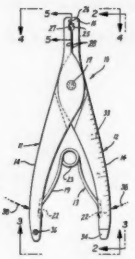
CLAMPING DEVICE

Arthur John Bonnel, Sr., Reno, Nev., assignor to Digitec, Inc., Reno, Nev.

Filed Sept. 8, 1972, Ser. No. 287,496

Int. Cl. B25b *7/00, 7/02*

U.S. Cl. 81—5.1 R **3 Claims**



A spring clamp hand tool is formed from a pair of pivotal members each having a handle end and a clamping end. When together the clamping ends form an elongate narrow, rectangular body having a recess disposed transversely therethrough to receive a protruding portion of a workpiece. Planar clamping faces forward of the recess are equipped with channels extending obliquely and longitudinally of the tool. A spring biases the clamping faces into clamping contact.

3,808,916

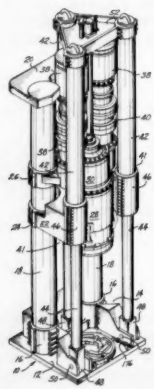
EARTH DRILLING MACHINE

Wilson B. Porter, Seattle, and Harold T. Klein, Bellevue, both of Wash., assignors to James S. Robbins and Associates, Inc., by said Porter and The Robbins Company, both of Seattle, Wash., by said Klein

Division of Ser. No. 75,020, Sept. 24, 1970. This application Mar. 30, 1972, Ser. No. 239,620

Int. Cl. B25b *17/00, 13/50*

U.S. Cl. 81—57.19 **10 Claims**



A travelling support frame is mounted for up and down travel by two parallel guide columns secured at their lower ends to a base frame. A portion of the traveling frame projects laterally of the drive columns and supports two drive motors, two reducing gearing assemblies, a collector gearing assembly and drive head means. The traveling frame and equipment carried thereby are moved up and down by triangularly arranged thrust ram means, each comprising a downwardly opening, upwardly projecting, piston chamber having a lower mounting portion originally secured to the traveling frame and a downwardly directed piston having a lower mounting portion secured to the base frame.

The drive head includes a breakout wrench having a plurality of laterally swinging wrench jaws moved in and out by linear fluid motors. The wrench jaws have radially inwardly directed wrench portions which are like spanner wrenches. The free end of each wrench jaw makes abutting contact with a shank portion of the adjacent wrench jaw, so that in use the wrench jaws brace each other and form a compression ring surrounding the engaged drill pipe.

The drill head includes a tool joint component which is movable axially a limited amount relative to the traveling cross frame. A connector rod connects this tool joint component to the piston of a linear fluid motor supported axially above the drill head. Fluid is introduced into the motor below the piston for the purpose of counterbalancing the weight of the drill head and any drill pipe connected thereto.

A holding wrench is located below the turning wrench. It comprises a plurality of wrench jaws pivotally mounted for lateral swinging movement, a surrounding control ring, and individual links interconnected between each wrench jaw and the control ring. The control ring is rotated by linear fluid motors. Rotation in one direction causes the links to move the wrench jaws radially inwardly into a position of engagement with holding wrench receiving portions on drill pipe, and movement in the opposite direction causes the links to move the wrench jaws radially outwardly in space relationship from the drill pipe.

ERRATUM

For Class 82—9 see:
Patent No. 3,808,653

3,808,917

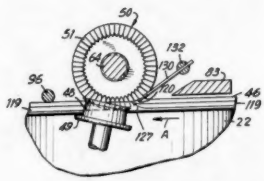
ELECTRIC CAN OPENER

Vincent H. McLaren, Jr., Cumberland, and Navnit Panchal, Riverside, both of R.I., assignors to Imperial Knife Associated Companies, Inc., New York, N.Y.

Division of Ser. No. 192,400, Oct. 26, 1971. This application Dec. 29, 1972, Ser. No. 319,302

Int. Cl. B67b *7/38;* **B23b** *1/00*

U.S. Cl. 82—47 **1 Claim**



An electric can opener having a rotatable cutter which cuts through and around a seaming (outer) wall of a double seam (chime) by which a can is secured to a can body. The rotatable cutter and a tractor wheel turn about axes which are substantially perpendicular to each other. The tractor wheel can be axially shifted by manual movement of an operating lever. The tractor wheel has a conical surface disposed to engage a chuck (inner) wall of a chime and a cylindrical surface

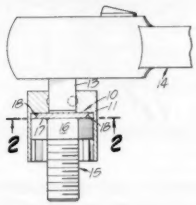
disposed to engage the top of a chime. Associated with the cutter is a shoulder wheel that rides on the outside of a can below the chime so that the can opener will hold a can after a seaming wall is cut entirely around a can and until a can is deliberately released by axially shifting the tractor wheel out of engagement with a chime. A first abutment above a chime and ahead of the tractor wheel (the direction of rotation of a can being the reference) extends forward from a can opener housing. Asecond forwardly extending abutment above a chime is located behind the tractor wheel.

3,808,918

MAGNETIC KEEPER ACCESSORY FOR WRENCH SOCKETS

Harry A. Carr, 2934 El Caminito, La Crescenta, Calif.

Filed Sept. 4, 1973, Ser. No. 394,348
Int. Cl. B25b *13/02*
U.S. Cl. 81—125 **13 Claims**



A keeper accessory designed to have an interference fit with the interior of a wrench socket and effective to hold a fastener part captive in the socket while being maneuvered into and out of assembled position. The keeper is blanked from magnetized, elastomeric stock with at least a portion of its perimeter bevelled to better accommodate an interference press fit with the interior sidewall of closely related sizes of wrench sockets.

ERRATUM

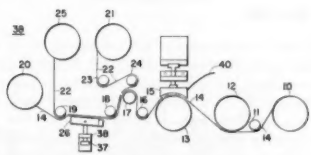
For Class 82—47 see:
Patent No. 3,808,917

3,808,919

SLITTING OF AN ELECTRICALLY CHARGED TAPE

William Pryce, and Eric Foster, both of London, Ontario, Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Oct. 20, 1972, Ser. No. 299,637
Int. Cl. B26d *3/08*
U.S. Cl. 83—7 **1 Claim**



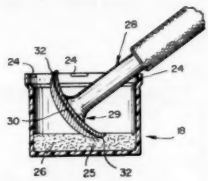
An electrically charged tape is slit by first backing the charged tape with a metallized tape, the charged tape in contact with the non-metallic surface of the metallized tape. The combined tapes are then passed over one or more cutters. The charged tape is completely cut through but the backing tape is only cut partially through. Clean cut edges and minimal distortion is obtained, even for very thin tapes.

3,808,920

SHAVING SYSTEM FOR EXTENDED BLADE LIFE

Arthur I. Fisher, Herod Pt. Rd., Box 228, Wading River, N.Y.

Division of Ser. No. 161,832, July 12, 1971, Pat. No. 3,763,998. This application Sept. 28, 1973, Ser. No. 401,875
Int. Cl. A45d *27/00*
U.S. Cl. 83—22 **2 Claims**



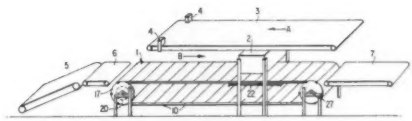
A shaving outfit includes a compartmentalized package carrying a whisker softening and/or face conditioning agent and an applicator pad for lubricating the cutting edge of a conventional shaving blade. The applicator pad is constructed of synthetic foam and secured to the underside of an overcap of an aerosol bomb carrying shaving cream. The cutting lubricant is silicone based and impregnated in the pad so that a lubricating coating will be applied to the cutting edge of a razor blade when the razor is inserted into an inverted overcap and pressed against the pad. The user prepares the area to be shaved in the normal manner, applying the conditioning and softening agent, e.g. shaving cream, thereto and then shaves by cutting the hairs with the blade edge while sliding the lubricated edge over the skin.

3,808,921

CUTTING MACHINE FOR CUTTING FLAT MATERIALS

Wilfried Baumann, Bredenweg 134a, 4801 Hoberge-Uerentrup, Germany

Filed Apr. 17, 1972, Ser. No. 244,386
Claims priority, application Germany, Apr. 15, 1971, 2118162
Int. Cl. B26d *7/06, 7/20*
U.S. Cl. 83—155 **11 Claims**

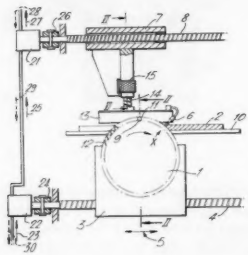


Cutting machine for cutting flat materials and comprising a punch and a feed conveyor. The conveyer consists of a plurality of plate members pivotally connected to each other by hinges. The hinges having bolts the prolongated ends of which are guided in guiding means at least during their travel through the punch. A pair of disks are provided on each end of the conveyer. The hinge bolts engage recesses on the peripherie of the disks during return travel of the conveyer. Driving means are arraged on the feed end of the conveyer to provide thrust action thereon. A magnetic brake is arranged on the output end of the conveyer to counteract the thrust action. At least to centering cones are positioned on one end surface of each plate member to engage corresponding recesses on the other end surfaces of the plate members for securing exact alignment of the plate members during their travel in the strands of the conveyer.

3,808,922
CIRCULAR SAW MACHINES

Hans-Jurgen Ohlhoff, Ulm (Danube), Germany, assignor to Wieland-Werke AG, Ulm (Danube) Postfach, Germany

Filed Apr. 13, 1973, Ser. No. 351,069
Claims priority, application Germany, Aug. 19, 1972, 2240938
Int. Cl. B26d 7/08
U.S. Cl. 83—168 6 Claims

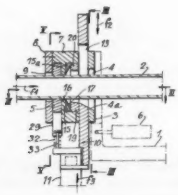


A circular saw machine in which the circular saw blade is mounted on a carriage and moved towards the work piece to be cut and a nozzle or nozzles are moved along with the saw blade for spraying, lubricating and cooling liquid onto the saw blade.

3,808,923
APPARATUS FOR CUTTING CONTINUOUSLY ADVANCING TUBES

Alain Edouard Plegat, Asnieres, France, assignor to Societe Anonyme Des Usines Chausson, Hauts de Seine, France

Filed Oct. 27, 1971, Ser. No. 193,003
Claims priority, application France, Nov. 27, 1970, 70.42727
Int. Cl. B23d 21/00, 25/04
U.S. Cl. 83—196 6 Claims

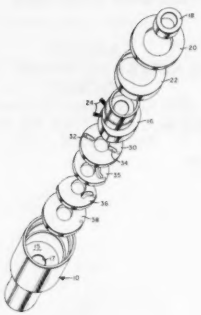


The apparatus comprises a shearing device including a single plate with a substantially rectangular opening surrounded by a sharpened edge, said plate being positioned perpendicularly to the longitudinal axis of a continuously moving tube to be cut. The tube, which may have a substantially rectangular shape, passes through the opening which is angularly disposed relative to the tube. Advancing mechanism moves the plate with and at the same speed as that of the tube and means subject the plate to reciprocation transverse the axis of the tube, thereby severing the tube by the sharpened edge surrounding the rectangular opening.

3,808,924
TUBULAR ASSEMBLY FOR CUTTING PNEUMATICALLY PROPELLED FILAMENTS

Billy George Ferguson, Hermitage, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 17, 1973, Ser. No. 351,817
Int. Cl. B23d 17/02
U.S. Cl. 83—199 4 Claims

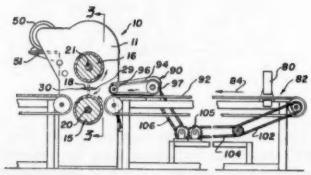


A tubular assembly for cutting pneumatically propelled filaments and disposing them for efficient takeup by a portable pneumatic sucker gun, includes a fixed hollow tubular outer housing and a radially movable spring tensioned hollow tubular inner member positioned within the outer housing. The inner member has a downwardly extending trigger pin in operational engagement with a pivotally mounted inner pair of flat horizontal contiguous coacting cutting discs. Each disc has a circular hole therein which forms a cutting edge and the discs are movable in scissor like fashion in response to radial movement of the trigger pin. Centering and severing of filaments passing through the assembly and simultaneous termination of air flow through the assembly is effected by movement of the assembly from open to closed position the movement being effected by inward radial movement of said inner member and consequent radial movement of said vertical trigger pin causing said discs bearing their respective cutting edges to pivotally slide toward each other centering and severing the filaments within the holes in the discs and effectively closing said throat.

3,808,925
ROTARY VENEER CLIPPER

John E. Hards, Delta, British Columbia, Canada, assignor to Durand Machine Company Ltd., New Westminster, British Columbia, Canada

Filed Mar. 12, 1973, Ser. No. 339,746
Int. Cl. B23d 25/02
U.S. Cl. 83—346 8 Claims



A rotary clipper for veneer and the like having a thin blad which cuts through veneer while moving in the same directio as the veneer while the latter moves over a supporting drum

The blade has an edge opposite its cutting edge which bears against a bracing drum while the blade cuts through the veneer. The drum and the blade are synchronized and rotated so that the cutting edge of the blade moves over the face of the drum at the same speed as the veneer moves over that drum.

3,808,926

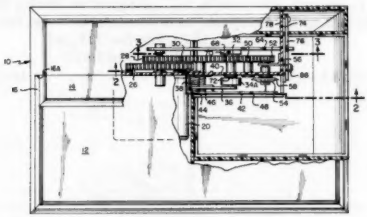
AUTOMATIC LETTER OPENER

James M. Osland, Wayne, N.J., assignor to Ketcham & McDougall, Inc., Roseland, N.J.

Filed May 19, 1972, Ser. No. 254,913

Int. Cl. B26d *9/00*

U.S. Cl. 83—356.1 **2 Claims**



A device for automatically opening an envelope by cutting a strip off one edge of the envelope is described. The cut scrap strip is then chopped into segments approximately one inch long and diverted toward a scrap drawer in the base of the device.

3,808,927

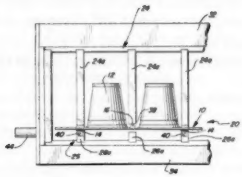
TRANSPORTING AND TRIMMER APPARATUS FOR PLASTIC FILM HAVING THERMOFORMED ARTICLES THEREIN

Peter C. Neil, Fullerton, Calif., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 280,518, Aug. 14, 1972, which is a division of Ser. No. 133,125, April 12, 1971. This application June 12, 1973, Ser. No. 369,259

Int. Cl. B26d *7/16*

U.S. Cl. 83—228 **2 Claims**



Disclosed is an apparatus for transporting a thin film of plastic having integral therewith a thermoformed article of manufacture and protrusions which facilitate guiding and advancing the film through the apparatus. The apparatus includes first and second guides spaced apart to provide a pathway. At least some of the guides include grooves which receive the protrusions. The guides also include slots which expose some of the protrusions, permitting a moving indexing finger to extend through the slots and engage the exposed protrusions. A trimmer is provided which includes a punch and die, and a film locator which engages at least one of the protrusions and brings the article of manufacture into proper alignment in the punch and die. The block carrying the punch is spring-loaded and biased to counter gravity. This provides a free-floating assembly which facilitates alignment of the punch and die.

3,808,928

APPARATUS FOR CUTTING A CONTINUOUSLY ADVANCING TUBE INTO SECTIONS OF EQUAL LENGTH

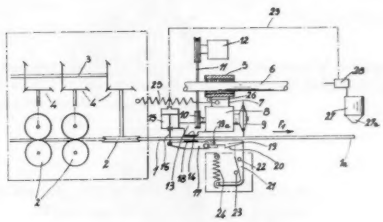
Alain Edouard Plegat, Asnieres, France, assignor to Societe Anonyme Des Usines Chausson, Asnieres, France

Filed July 3, 1972, Ser. No. 268,616

Claims priority, application France, July 6, 1971, 71.24618

Int. Cl. B23d *45/02, 45/20*

U.S. Cl. 83—289 **7 Claims**



The present apparatus comprises a sliding carriage placed on a guide extending in parallel with a tube to be cut, said carriage supporting a cutting device and a means making the same fixed with the tube under a control order applied thereto through a detector detecting the distance of which the tube has been advanced.

3,808,929

GRANULATOR FOR GRANULATING PLASTIC STRANDS

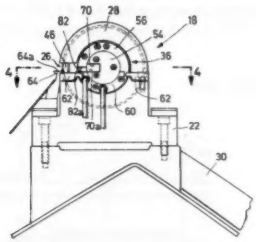
Rudolf Paul Fritsch, Goslarer Strasse 58, 7 Stuttgart 31, Germany

Filed Apr. 17, 1973, Ser. No. 351,967

Claims priority, application Germany, Apr. 22, 1972, 2219785

Int. Cl. B23d *25/00*

U.S. Cl. 83—356.3 **4 Claims**



The granulator has a hollow knife cylinder with knife edges extending from end to end. The plastics strands are fed in transversely to the longitudinal axis of the cylinder while the cylinder and strands are moved relative to one another longitudinally of the cylinder. The bearing system of at least one end of the cylinder is disposed within the cylinder. At this end, the cylinder is provided with an inclined surface projecting beyond the cylinder in the axial direction; the imaginary elongation of this surface meets or intersects the end of the path of the knife edges.

3,808,930

SHEARING DEVICE IN BOLT, BALL OR ROLLER PRESSES FOR SHEARING OFF WIRE SECTIONS

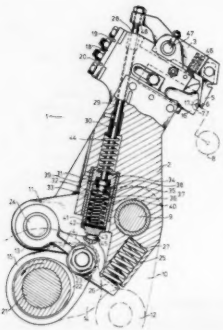
Karl Heinrich Sieben, and Wilhelm Pieper, both of Wuppertal, Germany, assignors to Gebr. Hilgeland, Im Rehsiepen, Wuppertal-Ronsdorf, Germany

Filed Mar. 6, 1973, Ser. No. 338,506

Claims priority, application Germany, Mar. 9, 1972, 2211261

Int. Cl. B26d 5/42, 7/02

U.S. Cl. 83—379 9 Claims



A device for shearing wire having a tiltable shearing arm with a shearing blade having a notch to receive a wire to be sheared. A clamp lever pivoted on the shearing lever has a nose to engage a wire in the notch. Cams are provided for tilting the shearing lever and for actuating the clamp lever. A pushrod is interposed between the clamping lever and the actuating cam therefor and has two degrees of a longitudinal resilience, with the lower degree of longitudinal resilience determining the clamp pressure and the other degree of longitudinal resilience determining the force required to dislodge a wire from the notch when it is clamped therein.

3,808,931

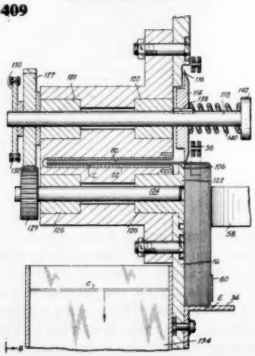
APPARATUS FOR STRIPPING COVERS FROM PAPERBACK BOOKS AND THE LIKE

Vincent N. Vulcano, New York, N.Y., assignor to Compu-Sort Systems, Inc., Brooklyn, N.Y.

Continuation-in-part of Ser. No. 92,350, Nov. 24, 1970, Pat. No. 3,722,342. This application Mar. 27, 1972, Ser. No. 238,190

Int. Cl. B26d 7/06

U.S. Cl. 83—409 9 Claims



An apparatus for stripping covers from paperback books and the like comprising means for supplying paperback books to a loading station, suction means at said loading station for partially rotating the cover of a paperback book away from the remainder of the book, means for conveying the paperback books serially from the station along a path, a cover deflector for maintaining the cover in a displaced condition, cutting means stationed along the path for severing each cover from the remainder of its book adjacent to the book's binding, and sorting means for depositing the covers in one location and coverless books in another location.

3,808,932

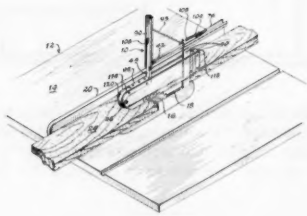
SAW GUARD

Ben C. Russell, Albemarle, N.C., assignor to Stanley Fixture Manufacturing Company, Incorporated, Norwood, N.C.

Filed Feb. 23, 1973, Ser. No. 335,143

Int. Cl. B27g 19/02; B23d 59/00

U.S. Cl. 83—478 10 Claims



A guard for table mounted circular saws or the like including a saw guard bracket assembly supported for selective vertical and horizontal movements relative to the saw and for conjunctive tilting movements with the saw relative to the table.

3,808,933

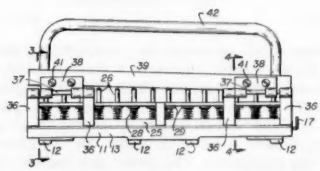
HAND OPERATED MULTIPLE DIE PUNCH

Danilo P. Buan, Pleasanton, Calif., assignor to Velo-Bind, Inc., Sunnyvale, Calif.

Filed Apr. 16, 1973, Ser. No. 351,363

Int. Cl. B26f 1/02

U.S. Cl. 83—588 4 Claims

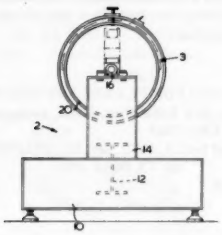


The bar which actuates the movable dies of a multiple hole punch is held in hinges at an angle so that when the punch handle is swung to operative position the bar slopes and engages the dies serially rather than simultaneously. Thus the effort required to swing the punch handle is reduced since only a portion of the holes are punched at any given instant.

3,808,934
DIE SAWING MACHINE

Jacques De Lanauze, 6421 Goncourt Ave., Villa D'Anjou, Quebec, Canada

Filed Jan. 22, 1973, Ser. No. 325,835
Claims priority, application Canada, Dec. 11, 1972, 158561
Int. Cl. B23d 49/08; B27b 19/02
U.S. Cl. 83—747 4 Claims

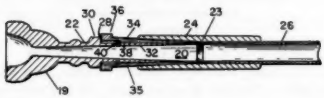


A machine for sawing curved die boards includes a sawing fixture for supporting a curved die board and a saw mounted coaxially with the longitudinal axis of the curved die board and adapted to saw radial slots in the board from the inside thereof.

3,808,935
CUP-MOUTHPIECE WITH DIVISIBLE SHANK

Robert Sims Reeves, 711 N. Ridgewood, Hollywood, Calif.

Filed July 9, 1971, Ser. No. 161,241
Int. Cl. G10d 9/02
U.S. Cl. 84—399 8 Claims



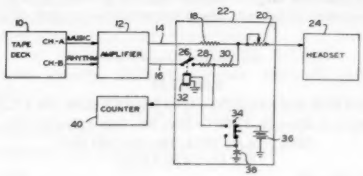
The shank surrounding the backbore of the mouthpiece of a cup-mouthpiece wind instrument is made divisible into an outer shank sleeve and an inner shank core. Without necessitating modification of the main mouthpiece body, the shank sleeve may be exteriorly tapered to fit any particular instrument in which the mouthpiece assembly is to be used. Also, fine adjustments may be made conveniently in the mouthpiece-to-leaderpipe gap, which in turn permit fine adjustments of both the low-range and the high-range response of the instrument.

3,808,936
METHOD AND APPARATUS FOR IMPROVING MUSICAL ABILITY

David L. Shrader, 11810 N.E. 141st St., Kirkland, Wash.

Continuation of Ser. No. 53,081, July 8, 1970, abandoned. This application Oct. 3, 1972, Ser. No. 294,525
Int. Cl. G09b 15/02
U.S. Cl. 84—471 9 Claims

A pair of recordings are synchronously reproduced, wherein one such recording suitably comprises a musical selection with which a student may correlate a response, while the second recording represents an ideal or correct response. The student hears the first recording continuously, but the second recording becomes audible to him only at the instance of his response coinciding with the information on the second recording. The student is thus given an immediate indication



of the correctness of his response for the purpose of reinforcing the student's performance. Also, an overall indication or summary is provided of the student's ability.

3,808,937
SCREW HEAD

John A. Roehrig, 125 St. Andrews, McKeesport, Pa.

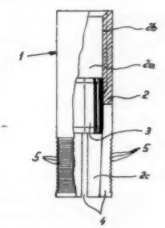
Filed Apr. 19, 1972, Ser. No. 245,404
Int. Cl. F16b 23/00
U.S. Cl. 85—45 2 Claims

A screw head having a V shaped kerf whose intersecting legs are off-center to provide a reliable coupling with a similarly flanged screw driver.

3,808,938
EXPANSION DOWEL CONSTRUCTION

Franz Chromy, Feldkirch-Levis, Austria, assignor to Palar (Curcao) N.V., Curacao, Netherlands Antilles

Continuation-in-part of Ser. No. 59,123, July 29, 1970, abandoned. This application June 1, 1972, Ser. No. 258,862
Claims priority, application Germany, Aug. 4, 1969, 6930827[U]
Int. Cl. F16b 13/04
U.S. Cl. 85—83 1 Claim



An expansion dowel is formed of a sleeve which defines a through bore. For securing the dowel into a hard fastening material, such as concrete, an expansion body is driven into the through bore from its rear end toward its forward end. At its forward end the sleeve is slotted for a portion of its length at circumferentially spaced positions. At its rear end the sleeve has a female thread. To increasing the holding action of

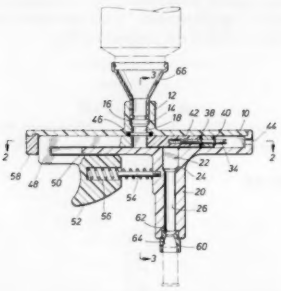
the sleeve in the fastening material a plurality of closely spaced, radially extending thin fin-like elements are formed on the exterior surface of the sleeve from its forward end for the entire expansion range of the dowel. For a dowel with an outside diameter of 20 mm, the elements have a pitch of about 0.5 mm.

3,808,939

POWDER MEASURING AND DISPENSING DEVICE

Clifford L. Ashbrook, 3740 Colony Dr., San Antonio, Tex.

Filed Nov. 6, 1972, Ser. No. 304,063
Int. Cl. F42b *33/00*
U.S. Cl. 86—28 **8 Claims**



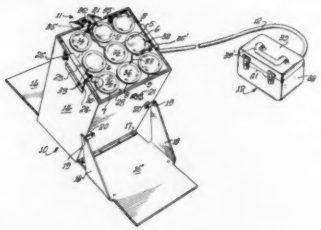
A powder measure and dispensing device includes a hollow casing in which a slidable block moves to position a measure chamber therein first opposite an upward projecting inlet and then opposite a downward projecting outlet. A washer, preferably an O-ring washer, surrounds the inlet opening at the surface of the block where the opening enters the hollow casing to ensure precision of powder measures in the measure chamber during the charging operation.

3,808,940

PORTABLE DECOY LAUNCHER SYSTEM AND ROUNDS THEREFOR

George H. Schillreff; Lawrence E. Grayson, and William M. Carter, all of Glendora, Calif., assignors to General Dynamics Corporation, Pomona, Calif.

Filed Dec. 24, 1964, Ser. No. 421,754
Int. Cl. F41f *3/00*
U.S. Cl. 89—1 R **13 Claims**



1. A portable launcher system comprising: a portable support base, said portable support base including extendable-retractable brace members to provide additional support therefor, a portable multi-round container unit removably mounted in said base, said portable multi-round container unit comprising a housing, a plurality of tubes fixedly secured in said housing, said tubes functioning for storage of associated rounds and as the launch base for firing of associated rounds, and electrical wiring operatively secured to said housing and adapted for connection with associated rounds, said support base being provided with means for retaining said container unit therein, a control apparatus for said power supply, said power supply and said control apparatus being positioned within a portable container and remotely located from said portable support base and said portable multi-round container unit, and means for interconnecting the electrical wiring of said container unit with said control apparatus whereby associated rounds may be launched therefrom individually, sequentially or in salvo

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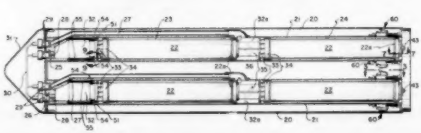
3,808,941

DISPENSER FOR FLARES AND THE LIKE

Eugene S. Biggs, Salt Lake City, Utah, assignor to Dynapac Inc., Salt Lake City, Utah

Filed Feb. 9, 1972, Ser. No. 224,886
Int. Cl. B64d *1/04*
U.S. Cl. 89—1.5 R **6 Claims**



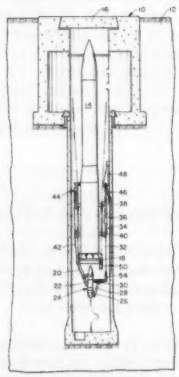
A dispenser providing for selective single or plural flare, or other drop package, release from aircraft. The dispenser comprises a housing containing one or more flare tubes in which flares are aligned, a trip-type arming device in the outlet end of each flare tube and an arming cap on each flare arranged to engage the arming device and to pull loose from the flare, thereby pulling arming and safety pins on the flare as it is discharged from the flare tube. Explosive devices are used to provide the thrust necessary to drive the flares from the flare tube and gas ports in the housing direct the expanding gases to expansion chambers in the flare tubes at the rear of the flares.

3,808,942

MISSILE REPOSITIONING SYSTEM

Harish K. Bhutani, Downey; Albert Y. Oda, San Fernando, and Ronald A. Hughes, La Crescenta, all of Calif., assignors to Menasco Manufacturing Company, Burbank, Calif.

Filed Feb. 10, 1972, Ser. No. 225,223
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.8 **2 Claims**



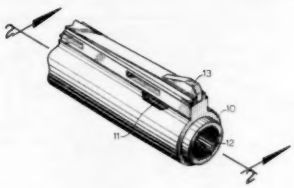
In combination with a missile supporting system wherein the missile is supported in at least three in number of supporting

points, a missile repositioning system wherein a sensor determines the angle of inclination of the missile, and if such angle exceeds an allowable range, effects actuation of a realignment means to realign the missile supporting system so that the angle of inclination is moved within the allowable range.

3,808,943
GUN-LEVELING DEVICE

Larry Kelly, 34341 Groesbeck Hwy., East Detroit, Mich.

Filed Apr. 27, 1972, Ser. No. 247,956
Int. Cl. F41f 17/12; F41c 21/18
U.S. Cl. 89—14 C **10 Claims**

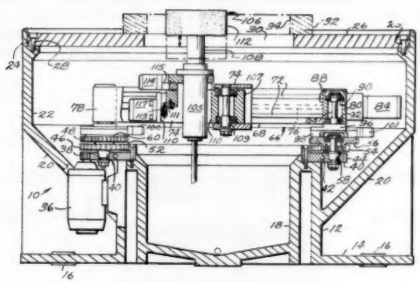


A handgun and rifle barrel device; said barrel comprising a cylinder with a bore with trapezoidal slots in predetermined positions and of predetermined proportions so that a torque reaction is induced at the discharge end of a gun barrel to prevent 'muzzle jump,' together with an induced anti-recoil action and reduction of noise and blowback of hot gases.

3,808,944
MECHANICAL GEOMETRIC GENERATOR FOR TROCHOIDS EMPLOYING A BI-LINEAR RADIAL CO-ORDINATE SYSTEM

Paul A. Braginetz, 214 Oak Ridge Cir., Staunton, Va.

Filed Mar. 30, 1973, Ser. No. 346,244
Int. Cl. B23c 3/02; B24b 5/00
U.S. Cl. 90—15 A **9 Claims**



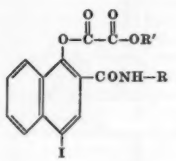
The disclosure embraces a grinding apparatus for forming or finishing the surface of a workpiece where the forming tool is adjustably mounted on a carriage assembly which moves the forming tool while the workpiece remains stationary; the carriage assembly consists of a carriage arm which is pivotably and adjustably connected at its extremities to planetary gears which in turn are drivingly connected to a sun gear; the connections of the carriage arm to the planetary gears is rendered adjustable so that when the planetary gears are moved about the sun gear in an orbital path the trace of the forming tool will follow that of a bi-lobed trochoid in the plane in which the surface of the workpiece is situated. Adjustment means are provided so that the size of the major and minor axes of the trochoidal path of the forming tool can be varied over a wide range.

3,808,945
LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC EMULSION

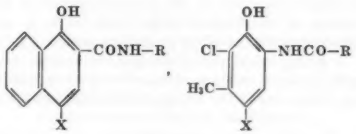
Shunji Matsuo; Shui Sato; Takaya Endo; Keiji Kasai, and Izaburo Inoue, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 21, 1972, Ser. No. 236,655
Claims priority, application Japan, Mar. 29, 1971, 46-17949
Int. Cl. G03c 1/40
U.S. Cl. 96—100 **4 Claims**

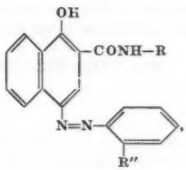
An alkoxal-oxy type coupler of the formula:



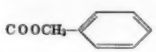
and at least one coupler of the formulas:



or



wherein R is substituted aryl, substituted aralkyl or a saturated or unsaturated aliphatic group having 1–22 carbon atoms; R′ is an aliphatic group having 1–6 carbon atoms; R″ is $COCH_3$, $COOC_2H_5$ or



and X is hydrogen or a group which will split off during the dye forming reaction and will not substantially color the coupler, is incorporated into a photographic material containing a light-sensitive gelatino silver halide photographic emulsion. The resultant material exhibits improved graininess and control of photographic gamma, without exhibiting desensitization.

ERRATUM

For Class 91—308 see:
Patent No. 3,808,620

3,808,946

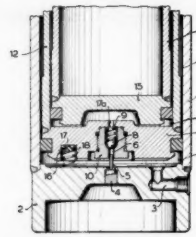
HYDRAULIC DOUBLE TELESCOPING MINE PROP

Gunter Bell, Horneburg, and Werner Gehrmann, Altlunen, both of Germany, assignors to Klockner-Werke AG, Duisburg, Germany

Division of Ser. No. 106,731, Jan. 15, 1971, abandoned. This application Feb. 22, 1973, Ser. No. 334,561

Int. Cl. F15b 11/18

U.S. Cl. 91—168 3 Claims



A hydraulic double telescoping mine prop in which the pressure spaces between the inner prop and the middle prop are hydraulically connected. A back-pressure valve in such connection is controlled by the pressure present in the pressure space of the middle prop. Such valve is unseated mechanically at the end of the inward movement of the middle prop. A spring is interposed between the middle and outer props and acts as a buffer to check movement and prevent unseating of the valve by the weight of the parts alone.

3,808,947

ELECTRO-HYDRAULIC ACTUATOR ARRANGEMENT

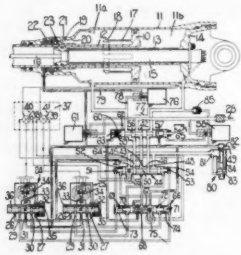
John Richard Simmons, Wolverhampton, and Roy Westbury, Bridgenorth, both of England, assignors to Lucas Aerospace Limited, Birmingham, England

Filed Oct. 4, 1972, Ser. No. 294,859

Claims priority, application Great Britain, Oct. 5, 1971, 46215/71

Int. Cl. F15b 9/03, 9/09

U.S. Cl. 91—363 A 21 Claims



An electro-hydraulic actuating arrangement as two servo control valves responsive to respective, nominally identical signals to provide output pressures, a further servo valve responsive to the output pressures of either, or both, servo control valves to provide operating pressures to selected sides of a piston actuator, an secondary actuator responsive to a difference between said output pressures to modify said electrical control signals in a way to reduce said difference, and lock valve responsive to a failure of a supply pressure, a failure of said electrical signals, or an increase in said pressure difference beyond a predetermined amount, to isolate both sides of said piston, and thereby prevent operation of the arrangement.

3,808,948

ELECTRO HYDRAULIC ACTUATOR ARRANGEMENT

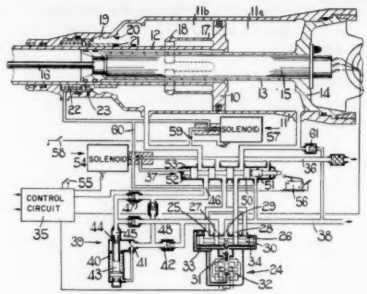
Stanley George Glaze, Kingswinford, England, assignor to Lucas Aerospace Limited, Birmingham, England

Filed Nov. 13, 1972, Ser. No. 306,333

Claims priority, application Great Britain, Nov. 13, 1971, 52818/71

Int. Cl. F15b 9/03, 9/09

U.S. Cl. 91—363 A 12 Claims



An electro-hydraulic actuator arrangement includes a fluid pressure operated actuator, an electrically operated servo valve to supply fluid pressures to the actuator and a lock valve operable to isolate the actuator and thereby to "lock " the latter. A comparator compares two nominally identical control signals and provides a signal to operate the lock valve when the difference between the control signals exceeds a predetermined value.

3,808,949

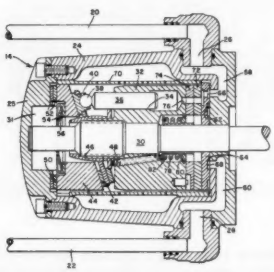
AXIAL PISTON HYDRAULIC MOTOR

Ludwig Muncke, Odenwald; Josef Buchmuller, and Konrad Stieler, both of Mannheim, all of Germany, assignors to Deere & Company, Moline, Ill.

Filed June 30, 1971, Ser. No. 158,261

Int. Cl. F04b 49/00, 3/00

U.S. Cl. 91—473 9 Claims

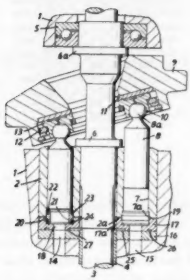


An axial piston hydraulic motor has a housing, a shaft journaled in the housing, and a cylinder barrel with a plurality of axially extending cylinders and pistons connected to the drive shaft. The outer end of each piston rides on a swash plate, which is shiftable to a limited degree in an axial direction between a condition, wherein it is freely rotatable relative to the housing so that it rotates with the cylinder barrel, and a locked condition, wherein it is locked to the housing, so that the cylinder barrel rotates when the pistons reciprocate. The swash plate is automatically shifted to its locked condition in response to the fluid pressure supplied to the cylinders.

3,808,950
FLOW-CONTROL ARRANGEMENTS IN AXIAL-CYLINDER PUMPS

Anthony Roger Davies, Swindon, England, assignor to Plessey Handel Und Investments A.G., Zurich, Switzerland

Filed Nov. 10, 1972, Ser. No. 305,408
Claims priority, application Great Britain, Nov. 13, 1971, 52842/71
Int. Cl. F01b *13/04*
U.S. Cl. 91—487 **3 Claims**

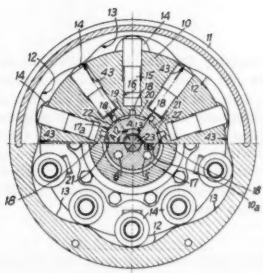


A fluid-tight seal between each cylinder bore in the barrel of a swash-plate pump and the corresponding port bore in a port plate rotating with the barrel is established by a sleeve, which is accommodated in aligned counterbores of the two bores, provided at the mutually adjacent end faces of the barrel and port plate, and which is sealed in each of these counter bores by a separate compressed O-ring seal, common rotation of the port plate with the barrel being ensured by means independent of the sleeves. The sleeve has sufficient play in the counter bores to allow for slight angular displacement between the respective end faces of the cylinder barrel and the stationary valve face of, for example, a valve plate. Preferably the O-rings are accommodated in annular recesses at each of the two ends of the sleeve and are compressed axially between washers resting respectively against the bottom shoulders of the two counter bores so that the resilience of the O-rings provides an axial thrust force urging the port plate into contact with the valve plate.

3,808,951
HYDRAULIC MOTORS

Louis E. Martin, Residence Brichebay, Senlis, France

Filed Feb. 28, 1972, Ser. No. 230,013
Claims priority, application France, Mar. 2, 1971, 71.07153
Int. Cl. F01b *1/06*
U.S. Cl. 91—492 **2 Claims**

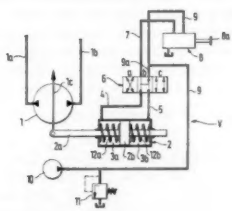


This invention relates to a hydraulic motor constituted by a cylinder block mounted to rotate in a support, by two groups of cams integral with said support, by rollers integral in translation with pistons contained in the cylinders of the cylinder block and in abutment on said cams, and by a valve coaxial with the axis of the cylinder block and provided with a slide for selecting the running conditions of the motor, with three positions, each cylinder comprises a pipe connecting it successively to a plurality of orifices disposed in two groups, which each correspond to a group of cams, and the orifices of the same group are regularly distributed on the valve, whilst the orifices of the group of orifices corresponding to the first group of cams comprise first and second orifices, which are alternately placed in communication, the first orifices with a first conduit connected to a source of pressurised fluid, or a discharge tank, the second orifices, which follow the first orifices, with a second conduit connected to the discharge tank or the source of pressurised fluid, respectively, and the orifices of the group of orifices corresponding to the second group of cams comprise third and fourth orifices, which are alternately placed in communication, respectively and selectively, by means of the selection slide, the third orifices with the first conduit, or with the second conduit, or with the fourth orifices, which follow said third orifices, and the fourth orifices with the second conduit, or with the first conduit, or with said third orifices.

3,808,952
REGULATING APPARATUS FOR A HYDRAULIC MACHINE

Hans Knaak, Rheydt, Germany, assignor to G. L. Reproth GmbH, Lohr/Main, Germany

Filed Apr. 20, 1972, Ser. No. 245,743
Claims priority, application Germany, Apr. 30, 1971, 2121267
Int. Cl. F04b *1/26*
U.S. Cl. 91—505 **7 Claims**



A regulating apparatus for a hydraulic machine, such as an axial piston pump with a regulator for adjusting the position of the swash plate for varying the displaced fluid volume, is provided with hydraulic setting means including a piston forming first and second chambers in a cylinder, and being connected with a regulator for operating it. A spring is located at least in the first chamber, acting on the piston. A auxiliary pump supplies pressure fluid to the second chamber at a predetermined pressure, and a regulating valve reduces the pressure of the fluid and supplies fluid at a reduced pressure to the first chamber so that the piston is balanced in a new position determined by the increasing counter force of the spring, and depending on adjustment of the pressure reducing regulating valve. In a modified embodiment, the working pressure of an axial piston pump is used for adjusting the regulating valve.

3,808,953

MEANS FOR MOVING THE SCREWS OF INJECTION UNITS IN INJECTION MOLDING MACHINES

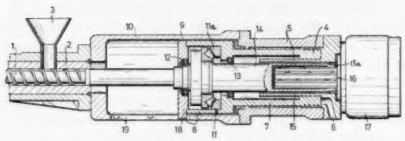
Richard Herbst, Munich, Germany, assignor to Krauss-Maffei Aktiengesellschaft, Munich, Germany

Filed Aug. 9, 1972, Ser. No. 279,167

Claims priority, application Germany, Sept. 15, 1971, 7135155

Int. Cl. F01b 21/04

U.S. Cl. 92—2 9 Claims



An injection molding machine wherein the plasticizing screw of the injection unit is rotatable and movable axially by a shaft which is rotated by the output element of a rotor. The shaft is movable axially forwardly by a piston which is reciprocable in a hydraulic cylinder. In order to reduce the wear on the piston, the latter is held against rotation and is provided with an enclosure for a set of antifriction bearings which surround the shaft and include an axial bearing located between two radial bearings.

3,808,954

FORCE TRANSMITTING DEVICE OF A WEIGHING VALVE FOR A VEHICLE

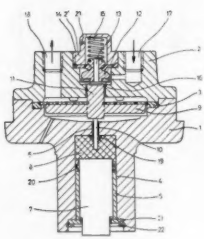
Gert Artur Persson, Oxie, and Lars Mattis Severinsson, Malmo, both of Sweden, assignors to Svenska Aktiebolaget Bromsregulator, Malmo, Sweden

Filed Mar. 24, 1972, Ser. No. 237,764

Claims priority, application Great Britain, Apr. 7, 1971, 9004/71; Dec. 4, 1971, 56416/71

Int. Cl. F01b 7/10

U.S. Cl. 92—65 7 Claims



A weighing valve mounted on a vehicle to produce a fluid having a pressure proportional to the load of the vehicle is activated by a force translating device which produces a proportionate force to the valve to thereby generate fluid flow changes of pressure signalling the loading on the vehicle. The force translating device has a differential piston with a plunger of smaller diameter for actuating the valve communicating with a plunger of larger diameter responsive to the load. The plunger and piston are interconnected through a deformable, incompressible medium such as silicone rubber into which both the end and sides of the smaller diameter plunger are extended thereby dampening vibrations.

3,808,955

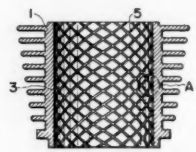
CYLINDERS OF INTERNAL-COMBUSTION ENGINES

Yoshitugu Hamada; Yasunori Nakamoto, and Seizo Jinno, all of Nagahama, Japan, assignors to Yanmar Diesel Engine Co., Ltd., Osaka, Japan

Filed Oct. 12, 1972, Ser. No. 297,092

Int. Cl. F01b 11/02; F02f 1/20

U.S. Cl. 92—169 5 Claims



Cylinders of internal-combustion engines, reciprocating-piston or rotary-piston type, made of hypereutectoid aluminum-silicon alloy and formed with a labyrinth of grooves, in checkered or spiral pattern for example, in at least the area of the inner surface along which gastight seal members of the piston slide, said grooves being packed with a dystectic material, such as a ferric alloy, molybdenum, metallic carbide, or ceramic, or a mixture thereof, flush with the rest of the inner surface formed of an aluminum-silicon alloy.

3,808,956

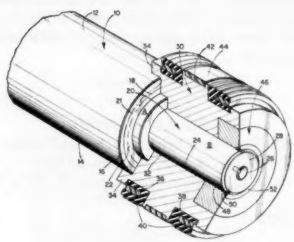
PISTON ASSEMBLY

Peter A. Knapp, 17 Albany St., Wollaston, Mass.

Filed Nov. 29, 1972, Ser. No. 310,478

Int. Cl. F16j 1/12

U.S. Cl. 92—172 9 Claims



A piston assembly for use in a hydraulic or pneumatic cylinder which has a piston mounted on a piston rod. The piston rod has a stud at its end, and the piston is axially bored and has a countersunk socket. The piston is assembled under heavy pressure onto the piston rod stud and over the end of the piston rod with a force fit. The piston has a second countersunk socket at its head end, and an apertured disc is assembled into this socket and onto the piston rod stud with a force fit. The disc is also welded to the stud.

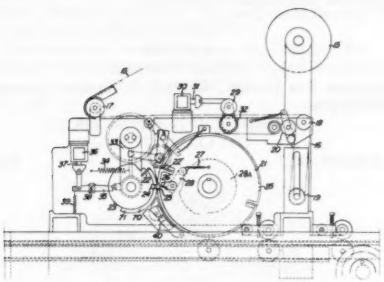
ERRATUM

For Class 93—84 see:
Patent No. 3,809,199

3,808,957
APPARATUS FOR ATTACHING HANGERS TO PAPER BOXES

Minoru Hosoya, Tokyo; Tatsuharu Hama, Yokohama, and Hisayuki Arafune, Kawasaki, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Aug. 3, 1972, Ser. No. 277,656
Int. Cl. B31b *1/86*
U.S. Cl. 93—36.7 **6 Claims**

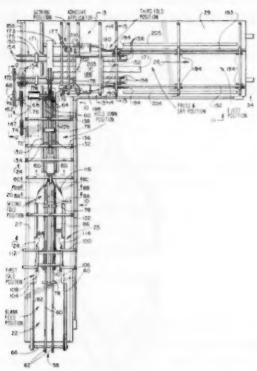


A substantially Z-shaped hanger is formed and attached to a container by feeding a tape around a pressing roller having a notch therein and simultaneously contacting the tape with a wheel having a projection for entering into the notch to form a fold in the tape. The wheel also carries a cutting blade for cutting a selected length of tape. A pressing member is disposed adjacent the notch for flattening the fold formed in the tape.

3,808,958
REEL FORMING APPARATUS

Arthur Keener; Larry David Bradford, both of Irving; Laverne E. Gray, Dallas; John W. McLeod, Dallas, and Billy W. Carter, Dallas, all of Tex., assignors to Lone Star Container Corporation, Dallas, Tex.

Filed Aug. 3, 1971, Ser. No. 168,562
Int. Cl. B31b *1/26*
U.S. Cl. 93—49 R **12 Claims**

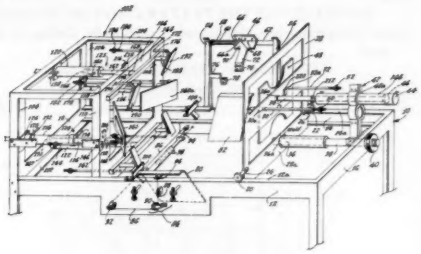


An apparatus for automatically converting blanks of various lengths of sheet material into parallelepiped shaped cloth reels of various lengths having a longitudinally extending strengthening web means and integrally formed end flaps upon which information can be printed.

3,808,959
CARTON ASSEMBLING APPARATUS

Lawrence Perry, 423 W. Park Ave., Santa Maria, Calif.

Continuation of Ser. No. 192,237, Oct. 26, 1971, abandoned. This application Jan. 5, 1973, Ser. No. 321,147
Int. Cl. B31b *15/00*
U.S. Cl. 93—53 AC **5 Claims**

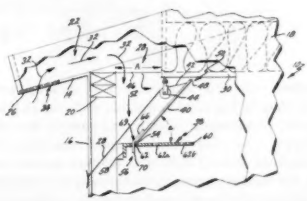


Apparatus for setting up a rectangular cardboard carton for filling through its top side from a flattened blank - preferably one with pressure sensitive adhesively coated flaps, which apparatus comprises a frame including a pair of parallel horizontally disposed base support members upon which are releaseably cantilevered a pair of support plates over which the carton blank is passed as it is introduced above one parallel member and moved toward the other. Unfolding of the carton blank occurs after the blank is moved over the plates to the opposite side of the apparatus from which it is introduced. The opened blank is then held by a spring mounted gripping claw. A back-up plate is passed through the opening formed by the opened sides of the carton and held in a plane normal to those sides. Pairs of plates are then moved from the opposite direction first to bring one opposed pair of flaps into position against the back-up plate and then withdrawn, following which withdrawal a second pair of plates brings the other opposed pair of flaps into abutment with the first opposed pair of flaps and applies pressure to cause adherence thereto by the contacting pressure sensitive adhesive surfaces. Thereupon all plates are withdrawn and the cantilevered support members are released to permit the thus-bottomed box to pass between the horizontally disposed based support members. The several steps are sequenced by a series of switches each of which is actuated as the previous step occurs.

3,808,960
ADJUSTABLE AIR INLET

Robert L. Van Huis, Zeeland, Mich., assignor to U.S. Industries, Inc., New York, N.Y.

Filed Nov. 22, 1972, Ser. No. 308,692
Int. Cl. F24f *13/08*
U.S. Cl. 98—41 R **9 Claims**



A louver is positioned in front of the air inlet opening by one or more support brackets and held upright at various deflect-

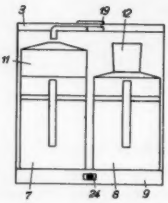
ing angles of inclination to the opening by a cable-pulley arrangement. The lower margin of the louver is selectively positioned in one of a plurality of laterally spaced openings in the bracket to vary the size of the down-wash opening while the lateral flow opening and the deflection angle of the louver is selected by the cable-pulley arrangement.

3,808,961

MACHINE FOR THE PREPARATION OF DRINKS

Ernst Grossenbacher, Oststrasse 25,, 9006 St. Gallen, Switzerland

Filed Aug. 16, 1972, Ser. No. 281,277
Int. Cl. A23f *1/08*
U.S. Cl. 99—281 **8 Claims**



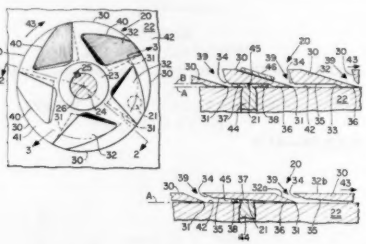
A machine for making coffee, tea or the like is provided having a platform for supporting two adjacent containers. A vertically standing housing having two chambers therein is positioned adjacent the platform. A first upper chamber in the housing contains a volume of water equal to the volume of each of the containers. Control means and heating means are located in a second, lower chamber of the housing. Passageway means provide fluid communication between the first chamber and the control means, the heating means and a liquid discharge tube that is located at an elevation at least as high as the highest level of water in the upper chamber.

3,808,962

METHOD OF AND APPARATUS FOR MAKING SUBSTANTIALLY UNIFORMLY SHAPED FLAKES

Alexander L. Liepa, Cincinnati, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Oct. 1, 1971, Ser. No. 185,607
Int. Cl. A21c *5/08, 9/08*; A23p *1/00*; B29b *5/06*
U.S. Cl. 99—323.4 **2 Claims**



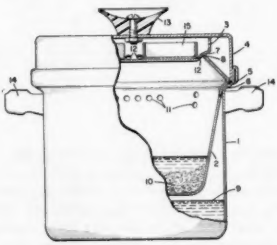
A method of and apparatus for making substantially uniformly shaped flakes of extrusible material as it issues from an extruder. The material is extruded directly into an unsealed flake-shaping void until a flake-shaped mass thereof accumulates in the void. After a flake-shaped mass has accumulated in the void, the void is physically de-formed and the flake-shaped mass is separated whereupon it becomes a discrete flake. The void is defined as the space between an external area of the extruder contiguous to its discharge port and a first surface of a movable element when the first surface faces the discharge port and is spaced the thickness of the void therefrom. The void is alternately formed and de-formed by moving the element having the first surface relative to the discharge port. The void is periodically de-formed to enable separating accumulated flake-shaped masses from the apparatus as by scraping the nose of the extruder with a knife blade. Mass formation and removal are facilitated by: combining the element having the first surface with a knife blade to form an integrated component; and revolving the component in the proximity of the discharge port so that the first surface and the blade alternately perform their respective functions.

3,808,963

STEAM COOKER

Octaviano Roa Ludena, No. 95-K-F, Kamias, Quezon City, Philippines

Filed Sept. 21, 1972, Ser. No. 290,811
Int. Cl. A47j *27/10*
U.S. Cl. 99—417 **8 Claims**



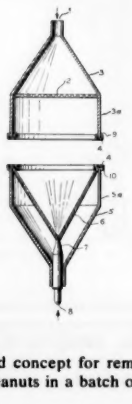
A handled food cooker comprising an outer container, a smaller perforated container fitting within the outer container and defining a water space therebetween, a perforated steam plate positioned on the smaller container, at least one further container positionable on the steam plate and a lid covering the outer container and thereby enclosing said smaller perforated container, said steam plate and said further container.

3,808,964

PNEUMATIC APPARATUS FOR BLANCHING HEATED OR ROASTED PEANUTS

Phillip C. Barnes, Jr., Bronwood, and Charles E. Holaday, Albany, Ga., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 17, 1972, Ser. No. 235,694
Int. Cl. A23l *1/18*
U.S. Cl. 99—518 **1 Claim**



New apparatus and concept for removing skins from peanuts is disclosed. Peanuts in a batch operation are continu-

ously forced into the air stream by the design of an internal retainer screen and a baffle formed by a second screen. The stripping action of the air and the rubbing of the kernels along the wall surfaces of an upper and a lower retainer screens efficiently separate the skins from the meats, and the skins removed from the batch by vacuum.

3,808,965

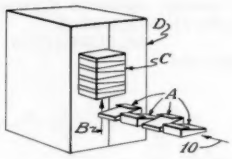
STRAPPING APPARATUS

Herbert G. Tull, III, Albemarle, Va., assignor to Hoerner Waldorf Corporation, Ramsey, Minn.

Division of Ser. No. 73,967, Sept. 21, 1970, Pat. No. 3,701,314. This application Oct. 12, 1972, Ser. No. 296,971

Int. Cl. B65b *13/20*

U.S. Cl. 100—7 10 Claims



The hopper is provided which is filled with a stack of paper bags or other material to be baled. The bags are transferred to a compression area where the stack is compressed. Straps are drawn about the stack and secured. The strapped bale is then discharged.

3,808,966

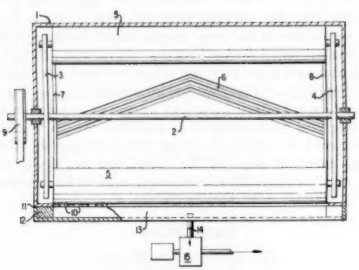
MACHINE FOR SQUEEZE DRYING WASHED INK ROLLERS

Gerhard Busch, Heidenkampsweg 48, 2000 Hamburg 1, Germany

Filed May 12, 1971, Ser. No. 142,529

Int. Cl. B41f *35/04*

U.S. Cl. 100—106 8 Claims



A machine for squeeze drying absorbent liners of ink rollers that have been washed previously, said rollers being used in printing presses; where the ink rollers are mounted in multiples on bearing spiders inside a drum having on its interior cylindrical surface spiral drain grooves. The two bearing spiders are rotated and have means to press the ink rollers against the inside of the drum, squeezing the excess washing fluid out of the ink rollers. The excess washing fluid drains into a lower drain area and is then drawn out of the drum by a vacuum suction pump.

3,808,967

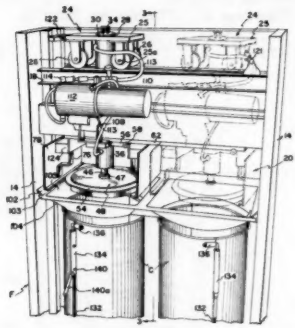
TRASH COMPACTOR

John Fair, Portage, and James L. Griswold, Highway M-60, Union City, both of Mich., assignors to said Griswold, by said Fair

Filed Aug. 7, 1972, Ser. No. 278,424

Int. Cl. B30b *15/16*

U.S. Cl. 100—221 8 Claims



A two-station trash compactor including a frame supported carriage movable in a longitudinal path of travel between a pair of longitudinally spaced, trash compacting stations, homing apparatus for guiding the carriage to the trash compacting station, a compacting ram vertically movable on the carriage between a raised position and a lowered trash compacting position for selectively compacting trash in either of a pair of longitudinally spaced, partible trash containers at the trash compacting stations, and ram driving apparatus on the carriage for moving the compacting ram in a to-and-fro vertical path of travel to compact the trash a predetermined amount and then automatically returning the compacting ram to a removed position.

3,808,968

PRESS-DEVICES

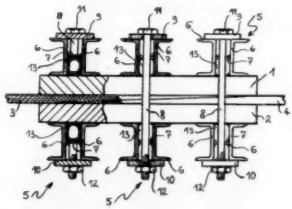
Claude Jacques Notin, Saint Chamond, France, assignor to "Etablissements Minet", Saint Chamond, France

Filed Jan. 16, 1973, Ser. No. 324,082

Claims priority, application France, Feb. 17, 1972, 72.05998

Int. Cl. B30b *1/38*

U.S. Cl. 100—264 5 Claims



A press device, as for instance for the binding of the bevelled ends of a conveyor belt by means of an adhesive, comprises two platens, cross-members of U-shaped cross-section on the outer side of each platen, with the U of each cross-member opening towards the corresponding platen, means to connect the protruding ends of the cross-members of one platen with the protruding ends of the cross-members of the

other platen, and inflatable hoses disposed in the U's of the cross-members to urge the platens towards each other. The hoses are preferably of the type comprising reinforcing plies of fabric.

3,808,969

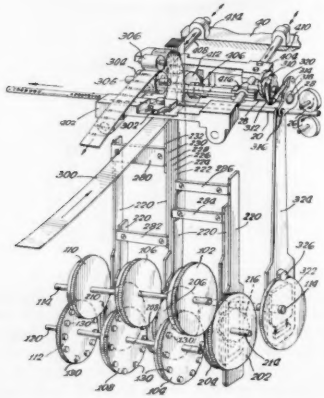
REPLICATING APPARATUS WITH LOCKING MEANS

Larry Neil Pearce, Oak Park, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Sept. 11, 1972, Ser. No. 288,172

Int. Cl. B41j *45/00*; **G06c** *25/00*

U.S. Cl. 101—72 **13 Claims**



An apparatus is disclosed which functions in a manner to pass by intermittent drive a member through a printing station for replicating at spaced locations a desired plurality of like imprint presentations. The printing components at the printing station are arranged in cooperation with an index mechanism for indexing the components after each plurality of replications to the next following sequence. The index mechanism comprises a train of geneva-type gears having a plurality of inputs thereto whereby additional replication may be accomplished.

3,808,970

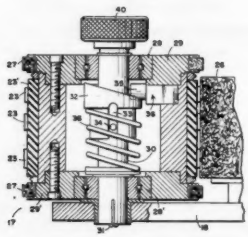
BIASED RETURN CODING DRUM

Patrick Delligatti, 883 E. 39th St., Brooklyn, N.Y.

Filed Nov. 25, 1968, Ser. No. 778,697. The portion of the term of this patent subsequent to May 7, 1990, has been disclaimed.

Int. Cl. B41f *17/26*

U.S. Cl. 101—35 **5 Claims**



A printing drum is rotatably mounted on a shaft so that it will roll on the surface of a parcel to imprint data thereon. The shaft carries a face cam capable only of sliding movement therealong, the cam having a high point from which at each side there is a gradual decline to a low point where there is a slight depression; a follower carried by the drum to move therewith, normally rests in said depression when the drum is not rotating, the drum being held stationary by compression coil spring about the stationary shaft which biases the cam to maintain contact with the follower, and also biasing the drum to normal rest position when it has been rotated by a parcel and subsequently the contact between drum surface and parcel has been terminated.

3,808,971

WEB REGISTRATION IN AN INTERMITTANTLY FED ROTARY PRINTING PRESS

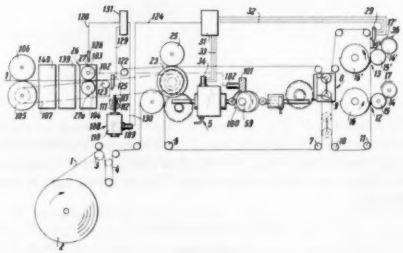
Otto Staamann, Berlin, Germany, assignor to Automatic Druckmaschinenfabrik, Berlin, Germany

Filed Oct. 24, 1972, Ser. No. 300,372

Claims priority, application Germany, Nov. 5, 1971, 2155711; Dec. 23, 1971, 2165288

Int. Cl. B41f *13/04*

U.S. Cl. 101—181 **16 Claims**



The forms are particularly endless forms having transversely extending lines of perforations. The press includes printing mechanisms having plate cylinders carrying plates extending through part of their circumferential peripheries, an equalizing carriage adapting web-shaped printing material, fed intermittently from a supply loop thereof, to the peripheral speed of the plate cylinders and executing a return movement during the printing interval, rolls carried by the equalizing carriage and looped by the printing material, and a main traction device, adjustable to the form length, with a main traction roll driven intermittently in the direction of traction and cooperable with pressure rolls. Printing means are provided either on the printing plates or on relatively adjustable rings on the plate cylinders to print adjusting marks on the printing material at the leading and trailing ends of each form length. Preferably the two marks on each form length are at respective different distances from an edge of the form, and are linear marks aligned with the respective form length ends to be perforated.

ERRATUM

For Class 102—28 see:
Patent No. 3,809,964

3,808,972

DUAL FUNCTION BOMB

Thomas A. Cammack, Beltsville; William J. Donahue, Takoma Park, and Peter D. Gratton, Simpsonville, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

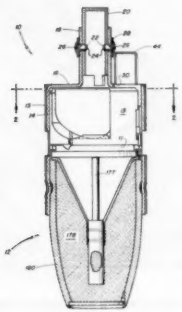
Filed Nov. 25, 1969, Ser. No. 880,459

Int. Cl. F42b *25/16*

U.S. Cl. 102—7.2 **10 Claims**

A dual function bomb combining anti-personnel and armor piercing capabilities in a single bomb and capable of dis-

criminating between targets. A frangible member in the bomb nose shears upon impact with a hard target, such as armor, and drives a firing pin into a detonator in an arming rotor to cause instantaneous initiation of an armor piercing shaped charge. Impact with soft targets, such as earth, will not shear



the frangible member but causes an inertia firing pin to initiate a propellant charge and a pyrotechnic delay. The propellant charge ejects the warhead upward three to ten feet at which time the pyrotechnic delay initiates the shaped charge for optimum effect against unprotected personnel in the vicinity.

3,808,973

SELF-PROPELLING PROJECTILE FOR FIREARMS

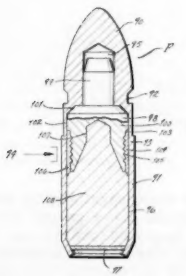
Giovanni Galluzzi, Lecco, Italy, assignor to Giulo Fiocchi S.p. A., Lecco, Como, Italy

Filed Dec. 17, 1971, Ser. No. 209,032

Claims priority, application Italy, May 31, 1971, 25246/71; Nov. 30, 1971, 31868/71

Int. Cl. F42b *5/26*

U.S. Cl. 102—38 **6 Claims**



A self-propelling projectile comprising a projectile body at the normally forward end of said projectile, a propellent charge at the normally rearward end of said projectile, and a primer element located between the ends of said projectile for ignition by side firing or percussion; there being means for maintaining said components in integrated relationship and with communication between said primer element and said propellent charge whereby upon explosion of said propellent charge the force of the latter will be directed against the base of the projectile body.

3,808,974

ALL PLASTIC SHOTSHELL CASE WITH TRANSVERSELY ORIENTED UNDULATIONS ON OUTER CYLINDRICAL SURFACE

George L. Herter, Waseca, Minn., assignor to Herter's Inc., Waseca, Minn.

Filed Nov. 8, 1971, Ser. No. 196,627

Int. Cl. F42b *7/06*

U.S. Cl. 102—43 P **3 Claims**

An all plastic shotshell case molded with the transverse base wall and cylindrical sidewall integral of and in one piece with each other, and the outer surface of the cylindrical sidewall having undulations all along the length thereof and oriented transversely of the longitudinal orientation of the cylindrical sidewall, said transverse undulations forming rings extending circumferentially around the cylindrical sidewall, or said undulations being in the pattern of circles, dots, squares, knurls or other shapes.

3,808,975

IGNITION CIRCUIT FOR PROJECTILE FUSES

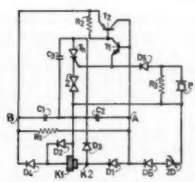
Dietmar Stutzle, Nurnberg-Langwasser, and Peter F. Weidner, Nurnberg, both of Germany, assignors to Diehl, Nurnberg, Germany

Filed Aug. 24, 1972, Ser. No. 283,354

Claims priority, application Germany, Aug. 28, 1971, 2143119

Int. Cl. F42c *11/06, 11/00, 13/00*

U.S. Cl. 102—70.2 GA **5 Claims**



A projectile with an electrically ignitable fuse is provided with a control circuit in which piezo electric cells are provided which develop a potential upon acceleration of the projectile and then develop a reverse potential upon relaxing of the acceleration on the projectile when it emerges from the firing weapon. The piezo electric cells are serially arranged and connected thereacross is a pair of condensors, the juncture of which is fastened to the juncture of the cells with one capaci-

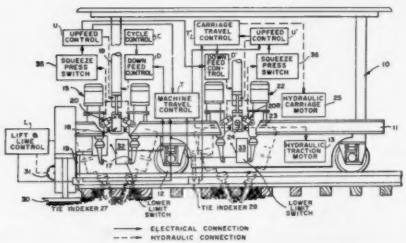
tor charging during the acceleration period of the projectile and the other charging during the relaxing period. A resistor connected across the capacitors provides for reversing of the charge on the one capacitor and which reversing triggers a control circuit. The control circuit releases the charge from a third capacitor which is charged by one of the cells during the relaxing period thereby to ignite the fuse. An impact control source of voltage is also provided for igniting the fuse upon impact of the projectile.

3,808,976

MULTI-HEADED TAMPER STAGGERED OPERATION

John Kenneth Stewart, Columbia, S.C., assignor to Canron, Inc., Phillipsburg, N.J.

Filed Sept. 27, 1972, Ser. No. 292,716
Int. Cl. E01b *33/02, 27/17*
U.S. Cl. 104—12 **6 Claims**



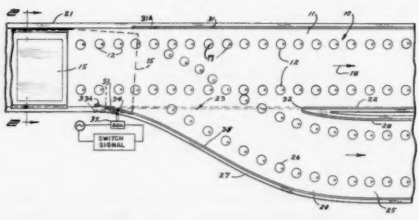
The invention relates to method and apparatus for tamping railway track ballast with a tamping machine having a fixed tamping head and a second tamping head movable along the machine chassis, the tamping heads being operated in a sequence such that whilst the first tamping head is conducting its tamping cycle the second tamping head is moving on the chassis and whilst the second tamping head is conducting its tamping cycle, the fixed tamping head is moving along the track, the tamping cycles of the heads overlapping each other with a substantially 180° phase difference.

3,808,977

SWITCH FOR VEHICLE GUIDEWAY

Charles H. Smoot, Wayzata; Lowell A. Kleven, Bloomington, and Gary J. Wirth, St. Paul, all of Minn., assignors to Uniflo Systems Company, Edina, Minn.

Filed Jan. 18, 1971, Ser. No. 107,199
Int. Cl. B61b *13/08*
U.S. Cl. 104—130 **16 Claims**



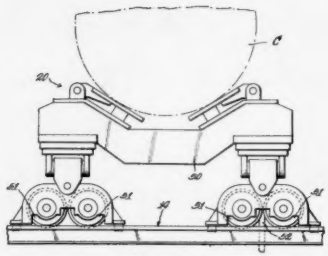
A positive action switch for air levitated vehicles operating on guideways whereby the vehicle can be switched from the main guideway to a spur or side guideway in response to predetermined signals.

3,808,978

COIL CAR TRACK SYSTEM

Frederick A. Ward, Poland, Ohio, assignor to Wean United Inc., Youngstown, Ohio

Filed Apr. 26, 1972, Ser. No. 247,519
Int. Cl. H02g *11/00*
U.S. Cl. 104—130 **11 Claims**



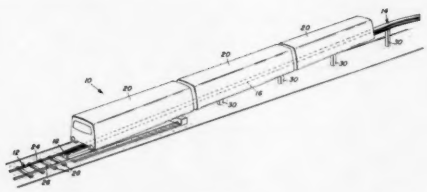
A track system for cars which carry heavy coils of steel between two or more stations where coils are processed. A single main track extends between such stations and switching means are provided at each station so that the coil car may be moved to one or the other of a pair of track sections at each station. The coil car is propelled by an electric motor and power rails are located in a pit below the car tracks. The coil car has a mast which extends downwardly into the pit and the mast carries shoes which slidably engage the power rails for the purpose of transmitting power to the coil car motor. The power rails are so arranged that an unbroken supply of power is transmitted to the coil car motor as the car proceeds to and from a track section and the main track.

3,808,979

RAPID TRANSIT SYSTEM

Francis L. Brown, 9200 W. Chester Pike, New York, N.Y.

Filed July 12, 1972, Ser. No. 271,176
Int. Cl. E01b *25/10*
U.S. Cl. 104—131 **7 Claims**



A car and track arrangement wherein said tracks have certain monorail sections above ground and certain standard track sections on the ground (and below ground) and said cars incorporate bogie constructions adaptable for engagement with one or each of said sections for smooth transition from one to the other.

3,808,980

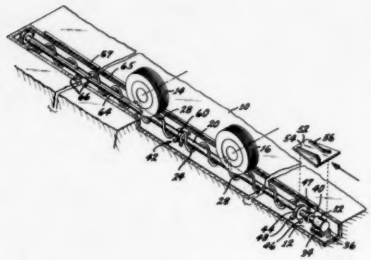
CONVEYOR MECHANISM FOR WHEELED VEHICLE

Conrad M. Winiarski, 10851 Wellworth Ave., Los Angeles, Calif.

Filed July 3, 1972, Ser. No. 268,510
Int. Cl. B61b *13/12*
U.S. Cl. 104—167 **8 Claims**

The invention is a conveyor or transfer means for wheeled vehicles. A helical member or worm is provided in a trough or channel extending in the direction that the vehicle is to be

transferred or moved. One or more wheels of the vehicle directly engage a convolution of the helix or worm which is



power driven to rotate about its axis so that the convolution of the helix exerts a driving thrust directly against the vehicle wheel to move or convey the vehicle.

3,808,981

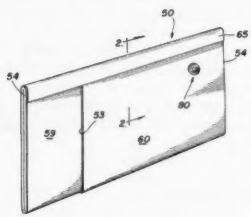
DISPOSABLE INFLATABLE DUNNAGE

Russell E. Shaw, Park Forest, Ill., assignor to Interlake, Inc., Chicago, Ill.

Filed Mar. 2, 1973, Ser. No. 337,545

Int. Cl. B61d *45/00*

U.S. Cl. 105—369 BA **14 Claims**



A device for use with a dunnage bag, the device including a valve mounted in the bag adapted to be connected to a source of high pressure air and an air regulator associated with the valve and positioned inside the bag to control the direction and the pressure of the air entering the bag from the source of high pressure air.

3,808,982

CARRIAGE ASSEMBLY FOR BULKHEADS

Leroy W. Bertram, Wheaton; Russell M. Loomis, Palos Heights, and Michael D. Gaikowski, Chicago, all of Ill., assignors to Unarco Industries, Inc., Chicago, Ill.

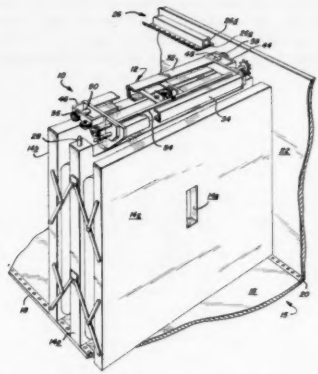
Filed Feb. 28, 1973, Ser. No. 336,773

Int. Cl. B61d *17/00*

U.S. Cl. 105—376 **9 Claims**

An improved bulkhead carriage for supporting and moving lading-engaging bulkhead panels along overhead tracks is disclosed and includes a force multiplier by which an operator who is pulling a chain fall applies an increased force to gear-drive means mounted to said carriage and which cooperate with said tracks. The force multiplier permits easy and accurate movement of the more recently developed heavier and sophisticated bulkhead assemblies.

Horizontally disposed alignment rollers are mounted on each side of the carriage for engagement with side walls of the



track on which the carriage moves, to permit easy movement of the bulkhead in the event the carriage drifts laterally with respect to the track.

3,808,983

VIBRATION SUPPRESSING TABLE

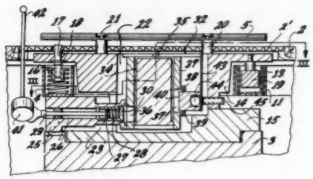
Simon Pielkenrood, Parklaan, Netherlands, assignor to Pielkenrood-Vinitex, Assendelft, Netherlands

Filed Apr. 14, 1972, Ser. No. 243,968

Claims priority, application Netherlands, Apr. 19, 1971, 7105264

Int. Cl. A47b *9/02*

U.S. Cl. 108—136 **14 Claims**



Vibration suppressing table, comprising a stationary base, a resiliently supported heavy mass provided with a supporting plate, a number of coil springs arranged in the corners of a polygon, the height of the bearing end of these springs being adjustable, the elastic center of these springs substantially with the center of gravity of the mass.

3,808,984

SECURITY DEVICE

Walter Teleky, 6050 Boulevard East, West New York, N.J.

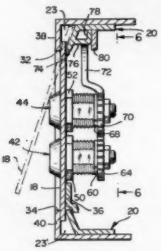
Continuation-in-part of Ser. No. 154,362, June 18, 1971, Pat. No. 3,715,998. This application June 9, 1972, Ser. No. 261,307. The portion of the term of this patent subsequent to Feb. 13, 1990, has been disclaimed.

Int. Cl. E06b *5/10*

U.S. Cl. 109—59 **6 Claims**

A pair of interrelated lock cylinders mounted in spaced parallel relationship preferably through separate cylinder apertures in a removable closure or door. The door is adapted

for accommodation within an access opening of a security box or other enclosure which has marginal recessed portions for receiving the peripheral edges of the door. Each of the lock cylinders is provided, on one side of the door, with a mating gear adapted for meshed engagement to effectuate interdependent cylinder operation. The insertion of a key into a key slot in each of the respective cylinders and the simultaneous turning of both keys is required in order to rotationally displace a tongue latch, integral with one of the mating gears, into selective locking engagement behind a latch keeper, whereby the door is secured in the access opening. Additionally, a tongue latch guard prevents the latch from being deformed by an external force, or otherwise misaligned, and thereby protects against unauthorized disengagement of the latch. An alternate arrangement of the lock mechanism is adapted for incorporation in a rim or mortise type lock.



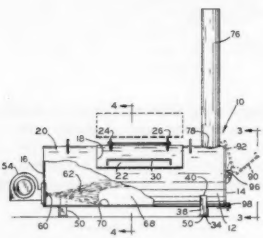
ERRATUM

For Class 110—8 see:
Patent No. 3,808,619

3,808,985
INCINERATOR

John Wayne Raber, Rt. No. 4 Huntington Rd., Huntington, Ind.

Filed May 7, 1973, Ser. No. 357,686
Int. Cl. F23g 1/00
U.S. Cl. 110—3 3 Claims

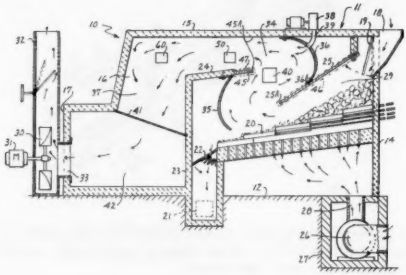


An incinerator consists of a cylindrical housing and a forced air oil-fuelled burner at one end of the housing which projects a flame substantially throughout the length of the incinerator. At the ends of the incinerator is a discharge opening normally covered by a hinged door, and a stack is mounted vertically on the housing at one end of the housing removed from the burner. The hinged discharge door is swung back to remove the ash after burning. The incinerator is particularly usable for disposing of organic product such as dead pig fetuses.

3,808,986
INCINERATOR FOR REFUSE MATERIAL

Charles Logdon, 680 Thiele Rd., Bricktown, N.J.

Filed Sept. 11, 1972, Ser. No. 287,636
Int. Cl. F23g 5/12
U.S. Cl. 110—8 R 9 Claims



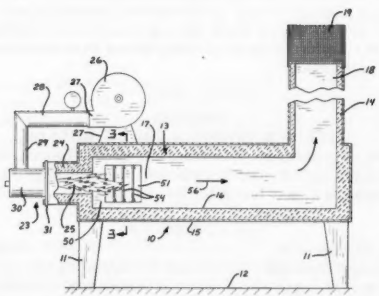
An incinerator apparatus having a feed opening at one end for receiving waste products to be incinerated and having a suction means at the other end to create a negative pressure within the incinerator; that is, a pressure slightly lower than the existing outside atmospheric pressure, and to insure a desired and constant flow of the products of combustion from a primary combustion chamber, through a secondary combustion chamber, through an expansion chamber, through a settling chamber and into the atmosphere through an exit stack.

The primary combustion chamber has the means to increase the normal combustion temperature by thermal radiation and heat reflection so as to appreciably incinerate all combustibles and appreciably reduce in volume the non-combustible matter present and the secondary combustion chamber has the means to utilize thermal radiation and heat reflection to incinerate the unburned volatile and volant combustibles from the first combustion chamber as they pass through the chamber.

3,808,987
AFTERBURNER CONSTRUCTION

Merlin W. Ehrlichmann, Minnetonka, Minn., assignor to West Creek Co., Inc., Minnetonka, Minn.

Filed Oct. 10, 1972, Ser. No. 296,099
Int. Cl. F23g 5/12
U.S. Cl. 110—8 A 8 Claims



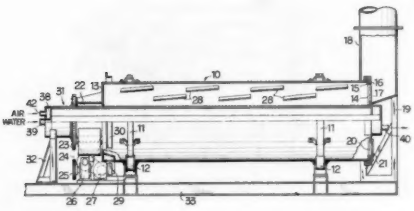
An afterburner construction including the outer housing and chamber construction, and the construction of the burner itself which together provide a highly efficient afterburner for use with incinerators and furnaces.

3,808,988

APPARATUS FOR SUPPLYING AIR INTO COMBUSTION CHAMBER OF ROTARY KILN INCINERATOR

Kumakichi Sugano, 34-6, 3-chome, Asakusabashi, Daito-ku, and Masanao Sugano, 22-5, 1-chome, Ojima Koto-ku, both of Tokyo, Japan

Filed Oct. 20, 1972, Ser. No. 299,331
Int. Cl. F23g 5/06
U.S. Cl. 110—10 6 Claims



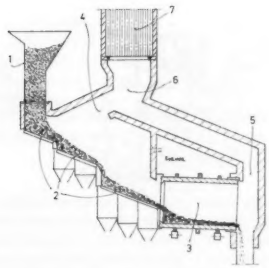
An inner drum extending axially through a cylindrical kiln is comprised of a hollow cylinder, and a hollow reinforcement structure closely fitted in the cylinder to prevent same from sagging at elevated temperatures. The reinforcement structure is cooled by the water flowing therethrough and may be substantially cruciform in cross section, dividing the interior of the cylinder into a plurality of air channels adapted to supply air into the kiln through a number of bores formed in the cylinder. The air channels are intercommunicated by a plurality of passageways extending through the reinforcement structure and/or by a hollow space formed at one or both ends of the cylinder in order to reduce fluctuations in the pressure or volume of air supplied thereto.

3,808,989

METHOD AND ARRANGEMENT FOR JOINTLY COMBUSTING HOUSEHOLD REFUSE AND SEWAGE SLUDGE

Ruediger Knaak, Heinestrasse, Germany, assignor to Koppers-Wistra-Ofenbau GmbH, Duesseldorf-Heerdt, Germany

Filed Jan. 3, 1973, Ser. No. 320,754
Claims priority, application Germany, Jan. 7, 1972, 2200756
Int. Cl. F23g 5/04
U.S. Cl. 110—14 7 Claims



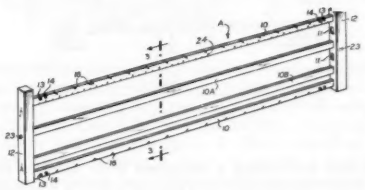
A mix of household refuse and sewage sludge is admitted onto a furnace grate over which it travels. During this travel the mix is dried, ignited and partially combusted. From a discharge end of the grate the partially combusted mix is discharged directly into a rotary furnace drum wherein combustion is completed. The combustion gases developing during partial combustion on the grate and during final combustion in the furnace drum are separately withdrawn and are thereupon united before being passed into a gas cooler.

3,808,990

APPARATUS FOR MAKING FRINGE

Della S. Rosenbaum, 835-B Park Central Dr. N., Indianapolis, Ind.

Filed Jan. 11, 1973, Ser. No. 322,784
Int. Cl. D05b 23/00
U.S. Cl. 112—9 2 Claims



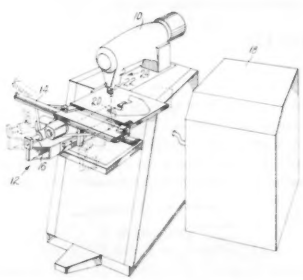
A fringe making apparatus having a pair of yarn coil support bars that are held in a selected one of several predetermined spaced relations by a pair of braces. The braces have a series of recesses for receiving the ends of the coil support bars, and the ends of stitching guide bars located between the coil support bars.

3,808,991

APPARATUS FOR FORMING NORMAL STITCHES

Hans F. Schaefer, Jr., Rockport, Mass., assignor to USM Corporation, Boston, Mass.

Filed Oct. 26, 1971, Ser. No. 192,288
Int. Cl. D05b 21/00, 25/00
U.S. Cl. 112—121.12 3 Claims



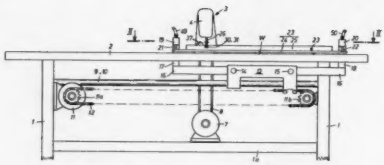
A method and apparatus for forming only normal stitches between threads. Normal stitches are those usually formed by sewing machines such as lockstitch or single or double thread chain stitch machines that do not have half-hitches or extra twists between the threads. The method comprises the steps of positioning the threads in a predetermined relation to stitch forming instrumentalities and then forming a stitch. The apparatus comprises means for adjusting the relative position of the threads prior to stitch formation and means for forming stitches between the threads.

3,808,992

DEVICE FOR FEEDING THE CLOTH IN A SEWING SYSTEM FOR THE PRODUCTION OF OPEN DARTS

Gunther Mall, Kaiserslautern, Pfalz, Germany, assignor to Pfaff Industriemaschinen GmbH, Kaiserslautern/Pfalz, Germany

Filed Jan. 12, 1973, Ser. No. 322,937
Claims priority, application Germany, Feb. 1, 1972, 7203543[U]
Int. Cl. D05b *37/08*
U.S. Cl. 112—121.15 7 Claims



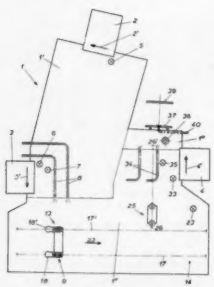
A device for feeding a workpiece cloth which is folded along a fold line along a feed path of a sewing machine, includes a pattern bar, having a guide edge, which is shaped according to the course of the seam, and which defines a guide surface for guiding a flat cutter and the workpiece so that the cutter cuts the workpiece along the folded edge. The pattern bar is mounted for movement to advance the workpiece into association with the sewing machine and the cutter, and the construction includes a stationary guide of U-shaped construction having two leg portions between which the folded end of the workpiece is guided and having a connecting web portion between the leg portions with a cutter access slot into which the cutter projects.

3,808,993

AUTOMATIC UNIT FOR OVERCASTING OR ASSEMBLING PIECES OF FABRIC ALONG SEAM LINES OF DIFFERENT FORMS

Wolfgang Heiler, Soufflenheim; Rudolf Muller, Sessenheim, and Jean-Jacques Becker, Bischheim, all of France, assignors to Vestra-Union S.A., Paris, France

Filed May 30, 1972, Ser. No. 258,048
Claims priority, application France, June 9, 1971, 71.21760
Int. Cl. D05b *25/00*
U.S. Cl. 112—155 7 Claims



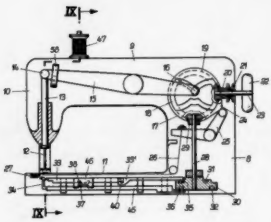
The disclosure is of a unit permitting the overcasting or assembling of pieces of fabric along seam lines of different forms, characterised in that it is constituted by a table, three machines, two transport devices, blowing mechanisms, a brake cylinder, a stacker and detectors.

3,808,994

ARRANGEMENT FOR MAKING KNOTTED CHAIN STITCH SEAM

Jean Kuhn, Bundersrepublic, 6369 Schoneck II, Germany

Filed July 31, 1972, Ser. No. 276,413
Int. Cl. D05b *1/06, 27/06, 29/08*
U.S. Cl. 112—199 10 Claims



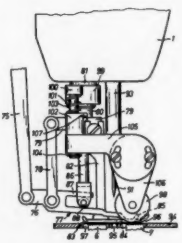
A chain stitch seam with knotted needle loop is formed by twice inserting a needle at the same point of the fabric in such a manner that the loop developed during the first part of the movement forms a knot which connects the loop of the preceeding knot with the loop formed during the second part of the needle movement.

3,808,995

SEWING MACHINE WITH DIFFERENTIAL FEED

Reinhold Dobner, Kaiserslautern; Erich Willenbacher, Karlsruhe, and Wolfgang Baus, Kaiserslautern, all of Germany, assignors to Pfaff Industriemaschinen GmbH, Kaiserslautern/Pfalz, Germany

Filed Dec. 8, 1972, Ser. No. 313,515
Claims priority, application Germany, Dec. 10, 1971, 2161295
Int. Cl. D05b *27/08*
U.S. Cl. 112—209 3 Claims



The invention is concerned with a sewing machine with differential feed means for maintaining the surplus width of garment blanks and simultaneously fixing the surplus width maintained by a seam in which the difference of the amount of feed of the feed dogs is controlled by a rotating program carrier, with a measuring wheel as an impulse emitter that scans the actual material feed at the stitch forming location and controls a step motor that drives the program carrier.

3,808,996

SANITARY HOLDING SUMP AND METHOD OF MAKING

Walter A. Gezari, Killingworth, Conn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 122,721, March 10, 1971, Pat. No. 3,722,538, which is a continuation-in-part of Ser. No. 24,789, Aug. 1, 1970, abandoned. This application Nov. 16, 1972, Ser. No. 307,230

Int. Cl. B63b *35/00*

U.S. Cl. 114—.5 R 6 Claims

A sanitary holding sump which can be formed in a blind cavity such as a toilet sump below an interior deck of a boat. The sump is formed with a laminated construction including two plastic bags, one within the other, and an intermediate plastic foam filler which has been cured to a rigid state. The top of the sump is sealed to the bulkhead and includes a ducted two-part cover plate for receiving and discharging waste material. The sump is formed below an interior deck by installing a first plastic bag connected to a first flange through an aperture in the interior deck, then placing a charge of foaming plastic resin in a substantially liquid state in the first bag, and then installing a second plastic bag connected to a second flange which covers the first flange. The inner bag is then pressurized internally, displacing the foaming resin in the outer bag and distributing it substantially evenly throughout the entire cavity or space between the two bags. Some expansion of the outer bag is accomplished by means of the foaming action of the resin. The resin eventually sets in its foamed state to provide the structural rigidity of the sump.

3,808,997

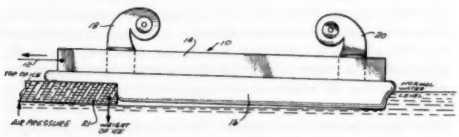
METHOD OF CLEARING A PATH THROUGH ICE

Clyde E. Bastian, Jr., Millington, N.J., assignor to Global Marine Inc., Los Angeles, Calif.

Filed Oct. 10, 1972, Ser. No. 295,804

Int. Cl. B63b *35/08*

U.S. Cl. 114—40 5 Claims



An icebreaking arrangement in which air is applied under sufficient pressure to lower the surface of the water at an ice-water interface to a level below the bottom of the ice over an area which extends on either side of the interface. The unsupported weight of the ice in the region in which the water level is depressed produces failure and breaking off of pieces of ice at the interface. The increased pressure is produced by an air-tight platform having a downwardly extending skirt around the periphery, air under pressure being admitted to the region below the platform. The platform may be mounted on the bow of a ship or moved ahead of a ship to clear a channel through the ice.

3,808,998

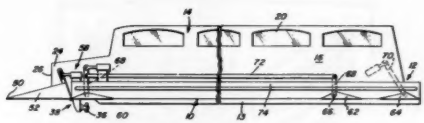
BOAT WITH BOW OUTDRIVE AND VERTICALLY SWINGABLE BOW PLANE

George C. Molotzak, 228 W. Ridge St., Coaldale, Pa.

Filed Apr. 2, 1973, Ser. No. 346,818

Int. Cl. B63b *1/22*

U.S. Cl. 114—66.5 R 8 Claims



A boat having the propulsion unit located adjacent the bow thereof with the boat hull having a wedge shaped bow and a transversely extending bow plane that is vertically swingable to facilitate planing of the boat and facilitate various specific uses of the boat. The bow plane, in effect, cuts off or slices through the top portions of waves to provide a boat which remains substantially in a stable attitude during its movement. Additional swingable planes are positioned alongside of the boat to facilitate control and stabilization thereof.

3,808,999

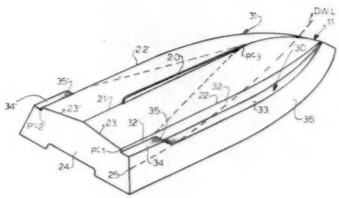
BOAT HULL CONSTRUCTION TO PROVIDE STERN LIFT

Ronald M. Peterson, 601 Continental Dr., Nashville, Tenn.

Filed Jan. 8, 1973, Ser. No. 321,726

Int. Cl. B63b *1/18*

U.S. Cl. 114—66.5 S 1 Claim



A V-shaped boat hull is formed with a pair of side shelves which extend from the bow to the stern and at the stern end are made of substantially less depth to provide a planing surface which tends to lift the stern and maintain the hull level during both acceleration and deceleration of the boat.

3,809,000

PASSIVE ROLL STABILISERS

Anne Horsford, Twickenham; George Richard Grant Lewison, Kew Gardens, and James Arthur Haines Paffett, Cobham, all of England, assignors to Secretary of State for Trade and Industry in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

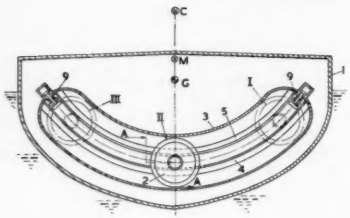
Filed Aug. 4, 1971, Ser. No. 168,963

Int. Cl. B63b *39/02*

U.S. Cl. 114—124 13 Claims

A passive roll stabiliser for floating vessels particularly small craft where a mobile body undergoes tuned damped oscillatory motion along an arcuate guide-way when the vessel rolls. The body is subject to the effects of rotational and translational inertias such that the rotational energy is at least half its

translational energy. This increases the oscillatory period of the body and enables the guide-way to be curved sufficiently to ensure an adequate static stability for the vessel. The body



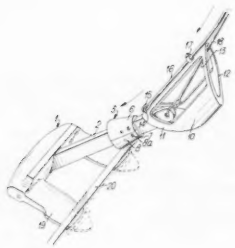
is preferably a rolling body whose motion is damped by a fluid-like substance which slips or tumbles in a chamber within the body as it rolls.

3,809,001

DEVICE FOR FREEING A FOULED ANCHOR

Andrew Alfred Thomas Shute, 37 Earl Hall Ave., Southend-on-Sea, England

Filed July 31, 1972, Ser. No. 276,438
Int. Cl. B63b *21/24*
U.S. Cl. 114—206 R **9 Claims**



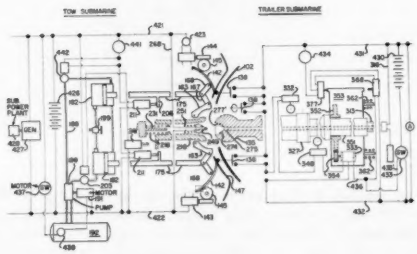
A device for freeing a fouled stockless anchor in which a cylindrical recovery sleeve has its ends cut slantwise to present elliptical leading and trailing edges. The sleeve is adapted, for example by being longitudinally split, to be received on an anchor line or chain so as to be slidable down the anchor line onto the shank of the anchor which is provided with a frusto-conical abutment over which the sleeve can pass. The recovery sleeve is provided towards its leading edge with attachment means for a lifting line and may be provided towards its trailing edge with a clip releasably to hold the lifting line in a position in which it does not interfere with the sliding of the recovery sleeve down the anchor line. Once the sleeve is on the anchor shank, the application of a pull to the lifting line cants the sleeve on the shank so that a pull is transmitted to the shank and the sleeve is prevented from sliding off the shank by engagement of its trailing edge with the abutment. The abutment provided on the anchor shank is suitably formed as two complementary abutment portions which can be secured in position around the shank, with the abutment thus constituted presenting a recess at its face farthest from the end of the shank attached to the anchor line, in which recess the trailing end of the recovery sleeve is positively engageable.

3,809,002

AUTOMATIC COUPLING MECHANISM FOR SUBMARINES DIRIGIBLES AND OTHER LIKE BUOYANT VEHICLES

Charles E. Nagy, 3221 Bend Pl., Hollywood, Calif., and John F. Nagy, 785 W. End Ave., New York, N.Y.

Filed May 31, 1972, Ser. No. 258,350The portion of the term of this patent subsequent to May 20, 1989, has been disclaimed.
Int. Cl. B63b *21/56*; B61g *5/06*; B64c *7/00*
U.S. Cl. 114—235 B **10 Claims**



This is a coupling mechanism for use in connecting together submarines, dirigible aircraft and other similar vehicles in a manner that cannot be readily effected by hand within water or in the air. These coupling mechanisms are automatic in operation and once the submarine or dirigible has made firm and true axial contact with a tow vehicle the ball mechanism will be automatically put into operation to extend the ball so as to engage a sensor plunger in the ball grip mechanism and thereby effect the operation of the mechanism to enclose the ball grip clamps about the ball head of the trailing vehicle to thereby finally effect the coupling of the vehicles, one with the other. At the same time that the mechanical coupling of the mechanisms is effected an electric coupling of a plug within a socket is made between the mechanisms so that electric current can be passed from the two submarine to the trailer submarine for the purposes of charging its battery and providing current directly from the generator of the tow submarine for various uses in the trailer craft. Adequate provision is provided in the ball head mechanism to take up any shock from the ball head when it is extended engaging with a wall obstruction in such a manner that would normally cause damage and so that the blow can be cushioned within the ball mechanism by the action of cushioning springs and by hydraulic dampening of the return of the ball to its extended position when the obstruction is removed and wherein automatic retraction of the ball should be effected should the obstruction not be removed. The same ball grips mechanisms operable in the same manner in response to engagement of a ball with a sensing pin can also, as shown, be used in the ground for mooring purposes of a dirigible. The finding and the joining of the coupling parts being effected through radio.

3,809,003

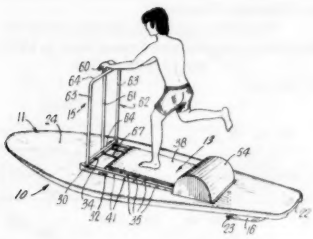
MECHANICALLY PROPELLED WATER CRAFT

Janos Foldvari, 300 Joliette, Apt. 403, Longueuil, Quebec, Canada

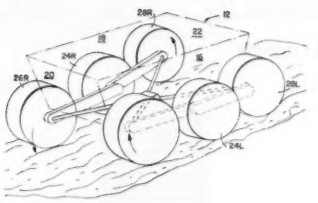
Filed Apr. 4, 1972, Ser. No. 240,986
Int. Cl. B60f *5/00*; A63c *15/04*
U.S. Cl. 115—1 R **9 Claims**

A water craft comprising a buoyant body having a load supporting surface. An endless belt having spaced apart upper and lower travel portions is supported above the load supporting surface for rotation between two supporting rollers secured within a supporting frame. Steering means are further

provided and positioned above the load supporting surface and connected to a rudder located underneath the buoyant body. Water propelling means are coupled to the endless belt for rotation thereof and for propelling the buoyant body in water.



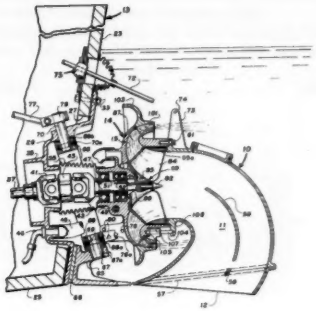
3,809,004
ALL TERRAIN VEHICLE
William H. Leonheart, 960 Washington St., San Carlos, Calif.
Filed Sept. 18, 1972, Ser. No. 290,201
Int. Cl. B60f *3/00*
U.S. Cl. 115—1 R **6 Claims**



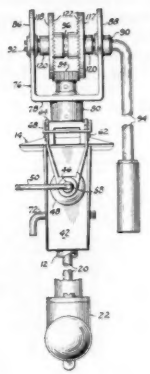
An all terrain vehicle and a suspension system for an all terrain vehicle is disclosed with a drive system that affords steerage by braking the wheels on one or the other sides of the vehicle and without turning the wheels. The improved suspension system is provided with independently suspended wheels which can have interchangeable parts with each wheel independently adjustable to adapt the vehicle for travel over relatively rough terrain or over relatively smooth terrain. Provision is made to shield the driving and suspending members for all wheels from the terrain and elements ambient to the terrain. A body is disclosed with an all terrain vehicle that is lightweight, reinforced for strength, and substantially water tight.

3,809,005
PROPULSION SYSTEM
Waldo E. Rodler, Jr., 1488 Cherry Garden Ln., San Jose, Calif.
Filed July 20, 1972, Ser. No. 273,503
Int. Cl. B63h *25/46*
U.S. Cl. 115—12 R **7 Claims**

A propulsion system for a vessel is described which includes an intake duct and an annular duct which together define a passage which provides two 180° reversals of direction. The annular duct provides a passage of increasing mean diameter and continuously decreasing interior cross section. An impeller accelerates the water by imposing dynamic and centrifugal forces thereon. Stator blades are provided to cause discharge of the water in a direction essentially straight to the rear of the boat.



3,809,006
MANUALLY OPERATED SMALL BOAT DRIVE
Burton C. Finn, P.O. Box 396, Lithia Springs, Ga.
Filed Oct. 25, 1972, Ser. No. 300,614
Int. Cl. B63h *16/12*
U.S. Cl. 115—24 **2 Claims**

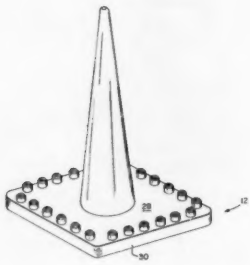


A housing, vertically connected with and supported by a small boat transom journals a shaft connected through driven gear elements to a propeller, is provided at its upper end portion with a manually operated handle, connected by drive gear elements to the upper end of the shaft by friction clutch assembly for driving the propeller in response to vertical movement of the handle.

3,809,007
PORTABLE TRAFFIC DELINEATOR
Woodrow I. Brown, 4140 Thompson Dr., Concord, Calif.
Filed Mar. 19, 1973, Ser. No. 342,814
Int. Cl. E01f *9/10*
U.S. Cl. 116—63 P **8 Claims**

A portable traffic delineator characterized by a base structure adapted to extend laterally from a conventional cone or other vertical standard, such base structure having a plurality

of vertical apertures extending therethrough. The apertures act as chimneys, resulting in an updraft of air as the wind passes over the apertures, to thereby cause the lower surface



of the base member to more tightly adhere to a roadway or other surface. The chimney effect is enhanced by providing short lengths of tubular elements extending upwardly from the respective apertures.

3,809,008

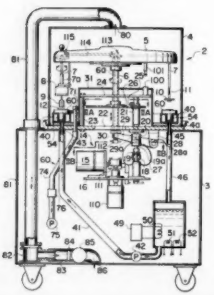
APPARATUS FOR PROCESSING TISSUE FOR ELECTRON MICROSCOPE EXAMINATION

Kikuo Takahashi, Narashino, Japan, assignor to Sakura Seiki Kabushiki, Kaisha, Tokyo, Japan

Filed Nov. 10, 1972, Ser. No. 305,583

Int. Cl. B05c *11/12*

U.S. Cl. 118—6 **10 Claims**



Apparatus for processing tissue for electron microscope examination comprises a series of processing reagent containing receptacles arranged in an annular row, a rotary transfer disc for transferring a tissue-containing basket along the series of receptacles successively one by one to dip the basket and the tissue contained therein into each of the reagents in the receptacles, and means for maintaining the atmosphere surrounding some of the reagents at sub-atmospheric pressure when the basket and the tissue therein are being dipped therein for processing, the sub-atmospheric pressure improving and accelerating ingress and impregnation of the reagents into the tissue being processed.

3,809,009

DEVICE FOR APPLYING A LAYER OF ADHESIVE ON AN ENDLESS BELT IN A SCREEN PRINTING MACHINE

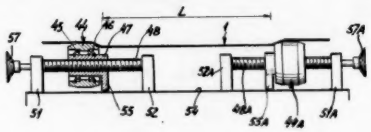
Stierlein Gerard, Mulhouse-Bourtzwiller, France, assignor to Societe Alsacienne de Constructions Mecaniques de Mulhouse, Mulhouse, France

Filed Mar. 22, 1972, Ser. No. 237,139

Claims priority, application France, Apr. 1, 1971, 71.11467

Int. Cl. B05c *11/00*

U.S. Cl. 118—44 **6 Claims**



In screen printing machines, in the vicinity to the belt adapted to carry the strip material to be printed, there are provided belt adjustable guiding means for deforming the belt so that its cross-section exhibits a configuration having a central portion of variable width, slightly protruding relative to the two remaining marginal portions, whereby the coating roll bears only against said belt central portion.

3,809,010

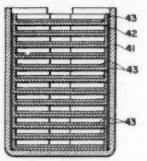
APPARATUS FOR GROWING OF EPITAXIAL LAYERS

Anthony John Springthorpe, Richmond, Ontario, Canada, assignor to Bell Canada-Northern Electric Research Limited, Ottawa, Ontario, Canada

Continuation-in-part of Ser. No. 128,284, March 26, 1971, abandoned. This application Oct. 24, 1972, Ser. No. 299,906

Int. Cl. B05c *3/109*

U.S. Cl. 118—429 **3 Claims**



A holder for liquid epitaxial growth includes a vertically slotted wall and a plurality of stacked recessed receptacles closely fitted within the holder and adapted to support the substrates. Each support is slotted through the peripheral wall thereof whereby to communicate the recess with the vertical slot. The loaded holder is contained in a crucible and pressurized means charge the crucible with the growth material.

3,809,011

APPARATUS FOR THE SURFACE COATING OF OBJECTS

Pierre Fabre, Grenoble; Robert Giroud-Garampon, Vourey; Michel Gondrand, Grenoble, and Fernand Raymond, Meyland, all of France, assignors to Tunzini Ameliorair Thermique, Aeraulique, Mecanique (T.A.M.), Paris, France

Division of Ser. No. 37,971, May 18, 1970, Pat. No. 3,695,909. This application Dec. 23, 1971, Ser. No. 211,611

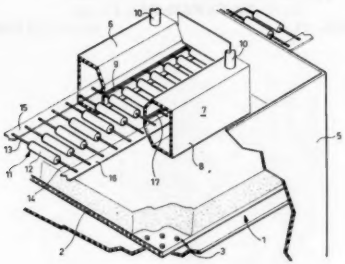
Claims priority, application France, May 23, 1969, 69.16009

Int. Cl. B05b *5/02*

U.S. Cl. 118—635 **7 Claims**

The present invention relates to an apparatus for the partial surface coating of objects, such as electrical components,

moving past an electrostatic coating station where they are coated with electrified particles of coating material. According to the invention the portion or portions of the components



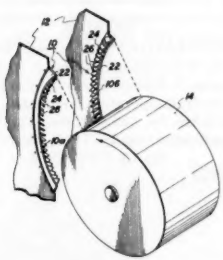
which are not to be coated, e.g. the connecting wires of electrical components, are maintained in a zone of pneumatic over-pressure during their passage through the coating station, whereby such portions do not become coated.

3,809,012

DEVELOPER SEAL

George D. Delvecchio, Briscoe Cove, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 24, 1972, Ser. No. 309,386
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 8 Claims



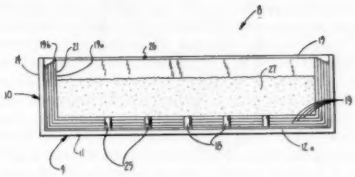
A developer housing seal for electrophotographic apparatus in which a developer with carrier beads which roll over part of the photoreceptor surface is applied to a photoreceptor drum inside a developer housing engaging the drum. This developer housing side or end seal, which may be integrally molded of rubber or other suitable materials, includes a multiplicity of overlapping resilient deflector vanes projecting in the direction of drum surface movement. These vanes angularly impact and deflect the carrier beads inwardly, away from the outside edges of the seals, thereby reducing developer leakage under the seals. The seals are in the form of an arcuate segment of the drum circumference extending partly around the drum, and their outer portion continuously engages the drum surface.

3,809,013

DISPOSABLE INSERT FOR LITTER BOX

Jack C. Rigney, San Francisco; Samuel H. Hollis, Alameda, and Nathaniel J. Doonan, Sausalito, all of Calif., assignors to The Thursday Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 140,901, May 6, 1971, abandoned. This application Nov. 6, 1972, Ser. No. 304,169
Int. Cl. A01k *29/00*
U.S. Cl. 119—1 26 Claims



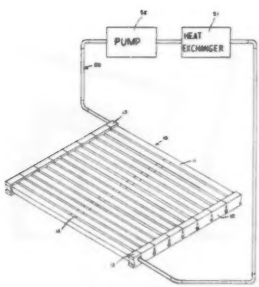
An insert for placement in an open, self-supporting tray for use as an animal litter box. A number of disposable screens are stacked on top of each other, constructed of flat, thin flexible material such as paper or plastic film, include a plurality of holes at their center portion and are placed in the tray so that walls of the tray fold the screens into a receptacle. Means is provided for closing the holes in the screens to prevent articles from entering the holes and for opening them upon lifting a screen from the stack. To change the liner and dispose of waste, the top liner is lifted whereby litter sifts through the holes onto the remaining screens for reuse while the liner and the waste thereon are discarded.

3,809,014

FLOORING SYSTEM FOR STIES AND OTHER ANIMAL SHELTERS

Robert S. Jones, R.R. 3, Pontiac, Ill., and Wesley E. Jones, 707 Burnham Dr., Park Forest South, Ill.

Filed Jan. 5, 1973, Ser. No. 321,386
Int. Cl. A01k *1/00*
U.S. Cl. 119—28 4 Claims



A flooring system for sties and other animal shelters utilizing thermoplastic slats and including means provided in the flooring for circulating a heat exchange fluid therethrough.

3,809,015

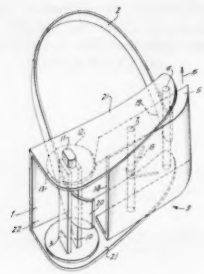
ANIMAL TREATING DEVICE

Claus Wiek, Bieber, Germany, assignor to Rheintechnik Weiland & Kaspar OHG, Bandorf, Germany

Filed Mar. 1, 1973, Ser. No. 337,215
Int. Cl. A01k *15/00*
U.S. Cl. 119—126 13 Claims

A device to be used for the treatment of animal claws has a strap which is secured to a support. In use, the strap encircles

the leg of the animal and bears against the Achilles tendon so that when the strap is initially tightened the leg of the animal is



forced against the support. Further tightening of the strap causes pressure to be exerted against the Achilles tendon so that the animal raises its leg for treatment.

3,809,016

STEAM GENERATOR WITH FLAT COMBUSTION CHAMBER BOTTOM

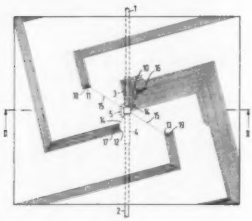
Rudolf Kral, Brauningshof, and Hermann Bruckner, Erlangen, both of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim Ruhr, Germany

Filed Oct. 30, 1972, Ser. No. 302,277

Claims priority, application Germany, Oct. 29, 1971, 2153965

Int. Cl. F22b *27/06*

U.S. Cl. 122—6 A **11 Claims**



In a steam generator having a combustion chamber defined by tubes forming a generally flat bottom wall and tubes forming upwardly extending side walls, means are provided in the general plane of the bottom wall forming entrance locations at which fluid medium enters the bottom wall tubes. The entrance locations are disposed substantially along vector lines arranged such that substantially all of the bottom wall tubes are each provided with two 90 degree turns in passing between its respective entrance location and said side walls and wherein the length of each of said bottom wall tubes is substantially equal.

3,809,017

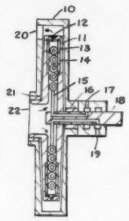
HEAT AND STEAM GENERATOR

Michael Eskeli, 6220 Orchid Ln., Dallas, Tex.

Continuation-in-part of Ser. Nos. 216,929, Jan. 11, 1972, Pat. No. 3,748,057, and Ser. No. 243,239, April 12, 1972. This application July 5, 1973, Ser. No. 376,877

Int. Cl. F22b *3/06*

U.S. Cl. 122—11 **16 Claims**



A method and apparatus for the vaporizing of liquids and for generation of steam, wherein a gaseous heating fluid is compressed with accompanying temperature increase, and this temperature increase is employed to provide for heat transfer to a working fluid which is in heat exchange relationship with said heating fluid during said compression. A rotating rotor with a heat exchanger mounted within is used to compress said heating fluid with said working fluid being within said heat exchanger conduits. Said gaseous heating fluid may also be condensed within said rotor with the heat of vaporization of said heating fluid being passed to said working fluid. Various fluids may be used for said heating fluid, such as halogenated hydrocarbons, ammonia, air, nitrogen or sulfur dioxide. For the working fluid, water, halogenated hydrocarbons, hydrocarbons or sulfur dioxide may be used. The fluids are so selected that said heating fluid has a higher temperature increase within said rotor than said working fluid so that heat transfer from said heating fluid to said working fluid may take place. By proper selection of the heating fluid, the work input of the unit rotor can be made to be nearly nil.

3,809,018

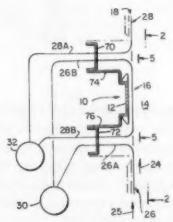
VAPOR GENERATOR MIXING SECTION SUPPORT

Harry M. Pratt, West Orange; Byram J. Magol, Convent Station, and Dudley P. Money, Parsippany, all of N.J., assignors to Foster Wheeler Corporation, Livingston, N.J.

Continuation of Ser. No. 210,687, Dec. 22, 1971, abandoned. This application May 29, 1973, Ser. No. 364,393

Int. Cl. F22b *37/24*

U.S. Cl. 122—510 **2 Claims**

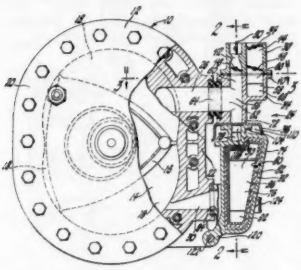


A support is provided for a pressurized wall of a once-through vapor generator in which mixing headers are positioned exteriorly of the wall. The support extends transversely across and is secured to the tubes which connect the mixing headers in flow communication.

3,809,019
ROTARY ENGINE WITH LOW EMISSION MANIFOLDING

Donald D. Stoltman, Henrietta, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 9, 1973, Ser. No. 331,052
Int. Cl. F02b *53/00*; **F02m** *31/04*
U.S. Cl. 123—8.01 **4 Claims**

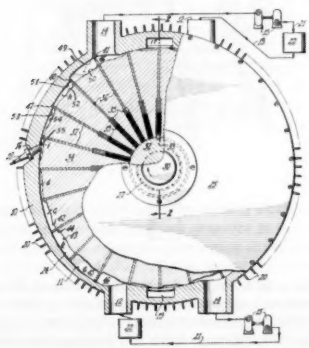


In a preferred embodiment, a dual rotor internal combustion engine is provided with manifolding including a two-stage intake manifold mounted on an exhaust manifold having an integral insulated reactor chamber and an exhaust heat passage external to the reactor chamber with a damper valve to control exhaust flow through the heat passage. The exhaust heat passage is in heat exchange relation with the primary mixture passage of the inlet manifold through a heat-transmitting plate. The plate forms part of a sheet metal bonnet which encloses portions of the exhaust manifold heat passage to form a heat stove connectible to provide heated air to the engine air inlet. Additional features are also disclosed.

3,809,020
SLIDING VANE ROTARY ENGINES AND PROCESS FOR OBTAINING HIGH TORQUE POWER

Hideo Takitani, 200 S. Makapu St., Kahului, Hawaii

Continuation-in-part of Ser. No. 4,799, Jan. 22, 1970, abandoned, which is a continuation-in-part of Ser. No. 752,961, Aug. 15, 1968, abandoned. This application Jan. 28, 1972, Ser. No. 221,572
Int. Cl. F02b *53/10*
U.S. Cl. 123—8.07 **17 Claims**

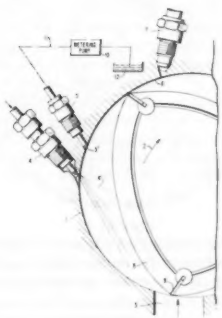


The process consists in obtaining high torque, rotary power from initial (high energy) fragments of expansion-produced work which is obtained by allowing just a limited pressure-drop of successive segments of a highly expansible gas. The rest of the work which could be obtained from more complete expansion may be extracted in some other way, as by segmental expansion in successive chambers and/or by it driving a turbine, and then these secondary outputs may be added to the first. Thus, in comparison with the output curve of the full stroke of a piston engine, here only the initial, nearly vertical segment of the total expansion curve is "severed" from the whole and is used to pace at high torque, a rotary drive shaft. Structurally, this is by the use of one or more successive, shallow, arcuately elongated, curcumferential-stepwise expansion chambers in a sliding vane, rotary engine, in place of the wedge-shaped chambers of the past. The latter resulted in low-torque output partly because they tried to expose as large as possible a contact area of the sliding vane, and the associated outward or radial gas-expansion in the wedge-chamber produced no obtainable work from such radial movement; also, the intended, nearly complete gas-expansion resulted in an "average" low-torque output because most of it was obtained from the flat end of the pressure-volume curve. The present process is applicable to both internal combustion and non-combustion (e.g. compressed air or steam) rotary engines of the sliding vane type, for which several new constructions are provided. Advantage is also obtained by use of a molded carbon facing for the rotor and the combustion chambers.

3,809,021
ROTARY-PISTON INJECTION-TYPE INTERNAL COMBUSTION ENGINE

Heinz Lamm, Esslingen-St. Bernhardt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Nov. 18, 1971, Ser. No. 199,921
Claims priority, application Germany, Nov. 18, 1970, 2056673
Int. Cl. F02b *53/10*
U.S. Cl. 123—8.09 **6 Claims**



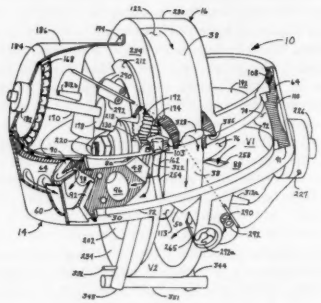
A rotary piston internal combustion engine, especially of trochoidal construction, in which a fuel injection valve is provided in the housing casing which injects fuel into the suction chamber of the engine, and in which a device is provided for lubricating the contact surface of the piston of the housing casing which is arranged downstream of the injection valve with respect to the direction of rotation of the piston.

3,809,022

ROTARY POWER TRANSLATION MACHINE

John K. Dean, Jr., 8007 Green Willow Court St., Huntsville, Ala.

Filed Nov. 15, 1972, Ser. No. 306,570
Int. Cl. F02b 53/00
U.S. Cl. 123—8.19 14 Claims



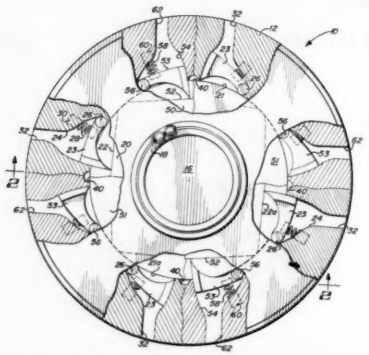
A rotary internal combustion engine wherein a pair of rotors operate synchronously in crossing orbital cavities and wherein a fuel-air mixture is drawn in and compressed by one rotor in one cavity, the compressed mixture fed to a precombustion chamber and therein ignited and fed into the other cavity to drive the second rotor and the engine.

3,809,023

ROTARY INTERNAL COMBUSTION ENGINE

William T. Wells, 1750 W. Ajo Way, Tucson, Ariz.

Filed Aug. 3, 1972, Ser. No. 277,736
Int. Cl. F02b 53/08
U.S. Cl. 123—8.27 14 Claims



A rotary internal combustion engine is disclosed which includes separate members for compressing a gaseous mixture and for deriving power from the combustion of the gaseous mixture.

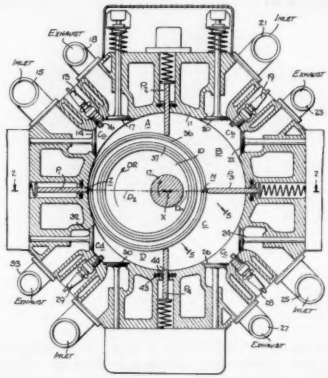
3,809,024

FOUR-STROKE AND TWO-STROKE ROTARY INTERNAL COMBUSTION ENGINE

Harold G. Abbey, 75 Prospect St., East Orange, N.J.

Continuation-in-part of Ser. No. 280,733, Aug. 14, 1972. This application Dec. 26, 1972, Ser. No. 318,664
Int. Cl. F02b 53/00
U.S. Cl. 123—8.45 10 Claims

A rotary internal combustion engine including a stator having a circular chamber within which is coaxially disposed a shaft supporting an off-center circular rotor, the diameter of the rotor being such that the distance between the center of the shaft and the zenith on the rotor periphery is substantially equal to the radius of the chamber whereas the distance between the center of the shaft and the nadir on the periphery is substantially equal to half this radius. Extending into the



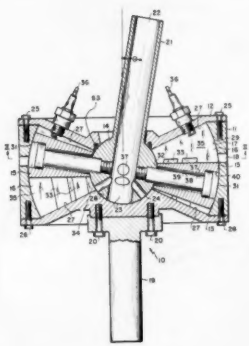
chamber are slide plates which are urged into continuous contact with the rotor surface to divide the chamber into operating zones of varying volume into which fuel charges are admitted for compression and ignition to produce gas expansion creating torque forces, the spent gases being exhausted from the zones.

3,809,025

ROTARY ENGINE HAVING INCLINED PISTON AND CYLINDER ROTATION AXES

Murry D. Harper, Dunbar, W. Va., assignor to Harper Development Corporation, Dunbar, W. Va.

Filed Feb. 2, 1973, Ser. No. 329,186
Int. Cl. F02b 53/00
U.S. Cl. 123—8.47 25 Claims



The rotary engine includes a housing which defines a plurality of chambers for primary compression and combustion and a plurality of pistons mounted to a piston carrier positioned within the housing. Both the housing and the piston carrier rotate at the same rate on separate shafts and the axes of rotation of the two shafts are at an angle to one another. Combustible gas is fed through a central hollow portion of the piston carrier shaft where it is directed into the primary com-

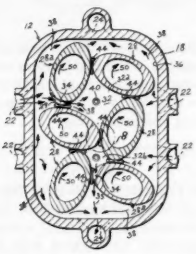
pression chamber by inlet means in the piston carrier which are exposed to the chamber through the movement of the housing relative to the piston carrier. Transport means communicate with each primary compression chamber to transport the combustible gas around the piston from an inlet side to a combustion side of the chamber.

3,809,026

ROTARY VANE INTERNAL COMBUSTION ENGINE

Duane P. Snyder, Rt. 1, Box 133, Bridgman, Mich.

Filed Feb. 28, 1973, Ser. No. 336,446
Int. Cl. F02b *53/00*
U.S. Cl. 123—8.47 **10 Claims**



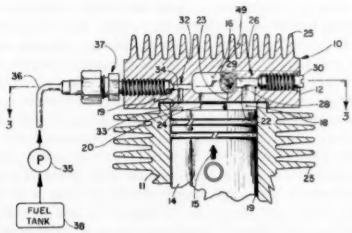
An engine of the internal combustion type having a plurality of cooperating elliptical rotors. A set of four such rotors rotate in the same direction about parallel axes to form a combustion chamber having a varying volume which depends upon the rotational position of the rotors. One of the rotors of each set of four rotors is slotted at its side wall so as to provide valving for the combustion chamber.

3,809,027

INTERNAL COMBUSTION ENGINE

Edward J. Morgan, Fond du Lac, Wis., assignor to Brunswick Corporation, Chicago, Ill.

Filed Feb. 28, 1972, Ser. No. 229,738
Int. Cl. F02b *15/00*
U.S. Cl. 123—30 R **14 Claims**



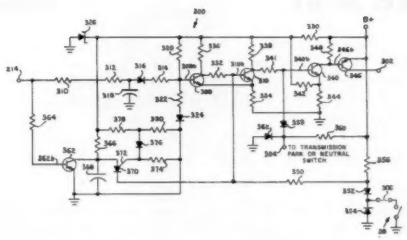
An improved self-injection reciprocating diesel or stratified charge type engine which utilizes pressure in the cylinder to air inject fuel into an adjacent combustion chamber. The combustion chamber and the cylinder space are connected by three separate passages, a small fuel passage, a primary air passage, and a secondary air passage, the secondary air passage being smaller than the primary but considerably larger than the fuel passage. Fuel is delivered by pump pressure to the fuel passage well before top dead center of the piston. As the piston approaches top dead center, it blocks the primary air passage; the resulting rapid pressure increase in the cylinder over that in the combustion chamber causes air from the cylinder to flow through the secondary air passage and create a swirl in the combustion chamber, and air to flow through the fuel passage which atomizes part and ejects the remainder of the fuel onto the wall of the combustion chamber from where it evaporates and burns. The secondary air passage, subsequent to the blocking of the primary air passage, provides the flow path for most of the air flowing from the cylinder to the combustion chamber and hence, controls the pressure differential between the cylinder and combustion chamber. Because the fuel passage is substantially smaller than the secondary air passage, it may be cooled without excessive heat losses and at the same time prevent premature evaporation and decomposition of the fuel. This separation and function of the secondary air and fuel passages in combination with self-injection, swirl creation in the combustion chamber, initial atomization of a small fraction of the fuel, and surface deposition of most of the fuel followed by evaporation are the distinguishing features of this invention.

3,809,028

FUEL CUTOFF CIRCUIT RESPONSIVE TO ENGINE DECELERATION CONDITIONS FOR USE IN CONJUNCTION WITH THE FUEL DELIVERY SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

David G. Luchaco, Horseheads, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sept. 27, 1971, Ser. No. 183,907
Int. Cl. F02m *51/00*
U.S. Cl. 123—32 EA **2 Claims**



A circuit is disclosed which includes a Schmitt trigger having a pair of control electrodes and which is responsive to a plurality of engine conditions to generate an output signal when the engine conditions indicate that a termination of fuel delivery to the engine is necessary. The circuit is preprogrammable to generate an output signal when the engine speed is in excess of a preselected value and a selected switch has changed state and to thereafter continue to generate the output signal while the switch state remains constant and until engine speed drops to a second, lower, preselected value.

3,809,029

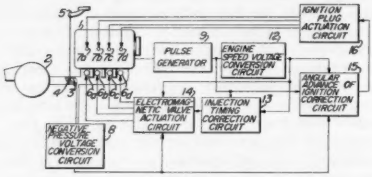
ELECTRIC CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINES

Hisato Wakamatsu, Kariya, and Kunio Endo, Anjo, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi and Nippondenso Co., Ltd., Kariya-shi, both of, Japan

Continuation-in-part of Ser. No. 1,687, Jan. 9, 1970, abandoned. This application Dec. 21, 1971, Ser. No. 210,322
Int. Cl. F02m *51/00*
U.S. Cl. 123—32 EA **11 Claims**

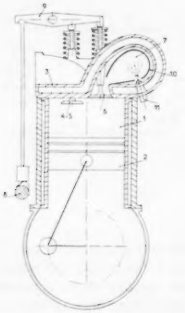
An electronic control for the fuel injection valves or ignition timing of an internal combustion engine senses a plurality of pulses generated throughout each engine cycle including a reference pulse for each cycle. Pulses are fed to a speed load, etc., voltage conversion circuits and a plurality of counting

circuits for each fuel injection valve. The counters supply an output starting signal depending on the capacity of each counter. A timing correction circuit connected to each counter determines capacity depending on engine speed, load,


IGNITION PLUG ACTUATION CIRCUIT
PULSE GENERATOR
ENGINE SPEED VOLTAGE CONVERSION CIRCUIT
ANGULAR ADVANCE OR IGNITION CORRECTION CIRCUIT
ELECTROMAGNETIC VALVE ACTUATION CIRCUIT
INJECTION TIMING CORRECTION CIRCUIT
NEGATIVE PRESSURE VOLTAGE CONVERSION CIRCUIT

etc., represented by voltage from the conversion circuit to modify the duration of an electro-magnetic valve driving pulse, or trigger an ignition, for, or at, a certain time determined by the output starting signal and counter input frequency from the pulse generator.

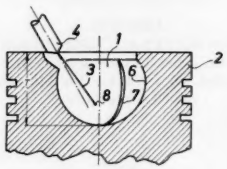
3,809,030
INTERNAL COMBUSTION ENGINES
Auguste Moiroux, 28 Route de Dardilly, Ecully, France
Filed Jan. 18, 1972, Ser. No. 218,810
Claims priority, application France, Jan. 18, 1971, 71.02414; Jan. 13, 1971, 72.01818
Int. Cl. F02b *19/02, 3/12*
U.S. Cl. 123—32 K **16 Claims**



Internal combustion engine which may be of the reciprocating piston type or rotary type in which there is a separate combustion chamber communicating through a valve with a compression and expansion chamber which may be constituted by a cylinder or stator casing of a rotary engine.

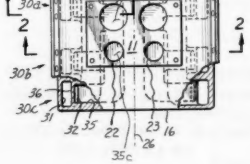
3,809,031
AIR COMPRESSING SELF-IGNITING FUEL INJECTION INTERNAL COMBUSTION ENGINE
Siegfried Meurer, Augsburg; Wolfram Emmerling, Nurnberg, both of Germany, and Nunzio D'Alfonso, Milano, Italy, assignors to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Nurnberg, Germany
Filed Feb. 17, 1972, Ser. No. 227,129
Claims priority, application Germany, Feb. 19, 1971, 2108012
Int. Cl. F02b *19/00*
U.S. Cl. 123—32 R **4 Claims**

An air compressing self-igniting fuel injection internal combustion engine, which includes a piston having a combustion chamber therein which receives the main portion of the injected fuel in the form of a thin film applied to the wall of the combustion chamber, and in which the geometric fuel jet direction during the injection step is so selected that the fuel film formed on the wall of the combustion chamber extends over as great a portion of the depth of the combustion



chamber as possible, the fuel film in view of its kinetic energy and the air circulation in the combustion chamber being conveyed to a downward step where at least a part of the fuel film breaks up and in droplet form and/or vapor form intermixes with the circulating combustion air.

3,809,032
INTERNAL COMBUSTION ENGINE MANIFOLD
George O. Morris, Newport Beach, Calif., assignor to Fred C. Offenhauser, Newport Beach, Calif., a part interest
Continuation of Ser. No. 73,010, Sept. 17, 1970. This application Aug. 3, 1972, Ser. No. 277,641
Int. Cl. F02b *75/22, 75/20;* **F02m** *11/00*
U.S. Cl. 123—52 M **7 Claims**

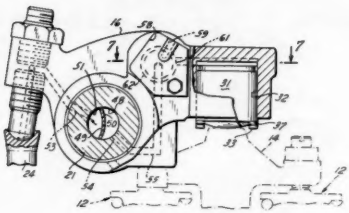


An internal combustion engine manifold adapted to mount a multiple-barrel carburetor to an engine, the carburetor having a primary barrel for supplying fuel-air mixture at lower speeds and a supplemental secondary barrel to supply supplemental fuel-air mixture at higher speeds. The manifold connects respective primary and secondary inlet ports to a respective cylinder intake port by means of separate axially-extending primary and secondary plenum chambers from which respective laterally-extending primary and secondary passages extend in pairs to respective cylinder inlet ports, the primary and secondary passages which discharge into a respective cylinder inlet port doing so in adjacency and in substantial parallelism. The plenum chambers may have a flat bottom surface against which the fuel-air mixture from the inlet port discharges substantially perpendicularly.

3,809,033
ROCKER ARM ENGINE BRAKE SYSTEM
Charles F. Cartledge, West Hartford, Conn., assignor to The Jacobs Manufacturing Company, West Hartford, Conn.
Filed July 11, 1972, Ser. No. 270,698
Int. Cl. F01l *13/06;* **F02d** *13/04*
U.S. Cl. 123—90.46 **16 Claims**

A rocker arm engine brake system for an internal combustion engine in which a rocker arm is movable by a cam operating off the cam shaft to open the exhaust valve of a cylinder at the usual time in the piston cycle; and when it is

desired to retard the speed of the engine, a lash piston in the rocker arm is hydraulically extensible at the will of the operator to take up the usual lash between the rocker arm and the exhaust valve so as to enable an auxiliary cam operating off the cam shaft to effectively cooperate with the rocker arm to open the exhaust valve at a time toward the end of a compression stroke of the piston so as to dissipate the energy of gases of compression from acting upon the piston. Separate passages in the rocker arm shaft are utilized for providing fluid for operating the lash piston and for general lubrication. The passages are interconnected by bleed holes. Selective control of the hydraulic system is obtained by means of a solenoid operable valve.



3,809,034

SPEED REGULATOR FOR AN INTERNAL COMBUSTION ENGINE

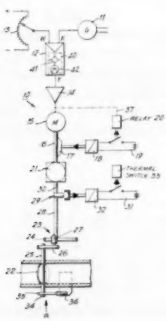
Horst Durichen, Steinebach am Worthsee, Germany, assignor to Deutsche Vergaser Gesellschaft mbH & Co. K.G., Neuss, Germany

Filed Dec. 30, 1971, Ser. No. 214,231

Claims priority, application Germany, Apr. 27, 1971, 2120510

Int. Cl. F02n *17/00;* **F02d** *11/10*

U.S. Cl. 123—102 **8 Claims**



A speed regulator for an internal combustion engine including a control device regulating the control valve for the fuel-air mixture to the engine. The control device is responsive to a voltage differential between a first voltage proportional to the engine speed and a second voltage based on a preset engine speed value, so as to provide for control of the valve. Another aspect lies in the provision of a thermal switch preventing operation of the control device during time when engine is below a minimum operating temperature, while concurrently maintaining the control valve in an engine idling attitude.

3,809,035

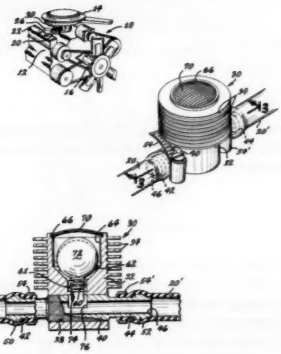
AIR ADMISSION VALVE FOR INTERNAL COMBUSTION ENGINES EQUIPPED WITH POLLUTION CONTROL VALVE

Herbert D. Winton, Woodland Hills, Calif., assignor to Ballmatic Corporation, Orange, Calif.

Filed Aug. 25, 1971, Ser. No. 174,675

Int. Cl. F02m *25/06, 23/08*

U.S. Cl. 123—119 B **5 Claims**



The invention is an automatic air inlet control valve for admitting additional air into the fuel mixture in internal combustion engines. The air valve is positioned in the pipe or conduit connecting the crankcase to the manifold and having a pollution control valve in it. The air valve body has heat radiating fins to produce a cooling effect on inlet air passing through the valve. The valve operates automatically depending upon the degree of vacuum and provides an auxiliary air mixing device which improves engine efficiency and additionally supplies additional air to mix with the fumes emanating from the crankcase and passing through the pollution control valve, thereby permitting improved combustion of these fumes. Thus, this reduces the amount of air pollution expelled from the exhaust pipe of the internal combustion engine.

3,809,036

FUEL INJECTION APPARATUS

Heinrich Knapp, Leonberg-Silberberg, and Reinhard Schwartz, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 22, 1973, Ser. No. 325,743

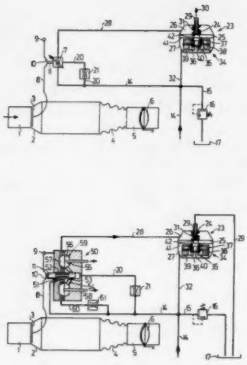
Claims priority, application Germany, Jan. 22, 1972, 2203018

Int. Cl. F02m *69/00*

U.S. Cl. 123—119 R **5 Claims**

In a fuel injection apparatus a fuel metering valve is controlled by an air sensor disposed in the air intake tube of an internal combustion engine for metering fuel quantities that are

proportionate to the intake air quantities. The pressure difference across the fuel metering valve is varied as a function of



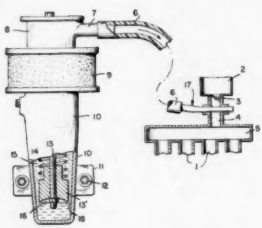
at least one engine variable in a hysteresis-free manner by means of an electromagnetic system including a coil armature and a permanent magnet.

3,809,037

VALVE FOR INTRODUCTION OF ADDITIONAL AIR INTO INTERNAL COMBUSTION ENGINES

Jens Leif Lokka, Haerland, Mysen, Norway

Filed July 20, 1972, Ser. No. 273,469
Claims priority, application Norway, Oct. 11, 1971, 3724/71
Int. Cl. F02m *23/08*
U.S. Cl. 123—119 DB **2 Claims**



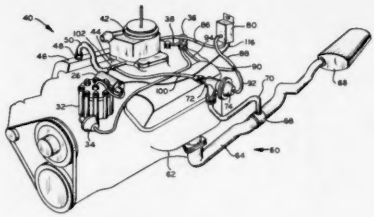
A valve controlled by the vacuum in the manifold of an internal combustion engine, has a valve body, the stem of which extends through an opening in the valve seat and down into a liquid-filled chamber, and a spring and a weight loading the valve, the weight being located in a constricted portion of the liquid-filled chamber so that the internal wall of said chamber and the weight define a narrow passage forming a damping device. Disclosed is an embodiment wherein the liquid-filled chamber is tapered in a direction away from the valve body, and the weight is capable of being raised or lowered on the valve stem, whereby the damping action is thus varied by the position of the weight on the stem. The valve is used to reduce the vacuum in the induction manifold of an engine and to supply additional air to the engine.

3,809,038

EXHAUST POLLUTION CONTROL APPARATUS

Richard N. Young, Richmond, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Aug. 24, 1972, Ser. No. 283,336
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A **22 Claims**



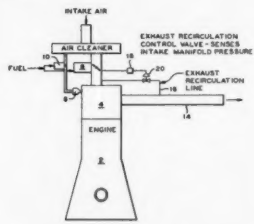
The invention is disclosed herein in apparatus for minimizing the emission of unburned and partially burned fuel from a vehicle internal combustion engine having a carburetor and intake manifold including means for providing a vacuum source for engine control function, an ignition system including an ignition coil, an electrical energy source connected to the ignition coil, and an exhaust gas manifold. An exhaust gas recirculation valve is utilized for feeding exhaust gases back from an exhaust system to an intake manifold. A solenoid valve is utilized for selectively connecting a vacuum source to operate the exhaust gas recirculation valve. An electronic engine speed sensing means is utilized to control the solenoid valve. Although the electronic engine speed sensing circuit disclosed herein has particular applicability as a control means with the vehicle system described, it should be noted that the novel electronic engine speed sensing circuit has utility elsewhere.

3,809,039

STRATIFIED CHARGE SPARK IGNITION INTERNAL COMBUSTION ENGINE WITH EXHAUST RECYCLE

Henry E. Alquist, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 25, 1972, Ser. No. 291,612
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A **9 Claims**



A spark ignition system and a method for operating same by passing a first fuel-air mixture into a precombustion chamber of the engine and a second leaner fuel-air mixture into a primary combustion chamber, igniting the first mixture for igniting the second mixture, and controllably mixing about 5 to about 20 percent of the exhaust gas resulting from the combustion of the fuel mixtures with the second fuel-air mixture during operation of the engine at greater than about 75 percent maximum power output with the amount of exhaust gas being mixed with the second fuel-air mixture varying directly with the power output of the engine.

3,809,040

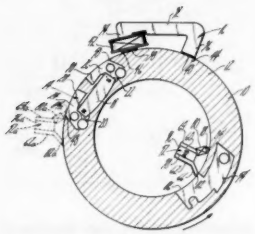
IGNITION TRIGGERING CIRCUIT WITH AUTOMATIC ADVANCE

Bob O. Burson, East Longmeadow, and Russell Dale Phelon, Longmeadow, both of Mass., assignors to R. E. Phelon Company, Inc., East Longmeadow, Mass.

Continuation-in-part of Ser. No. 758,563, Sept. 9, 1968, abandoned. This application June 5, 1970, Ser. No. 43,845

Int. Cl. F02p 3/06

U.S. Cl. 123—148 E 12 Claims



In a breakerless ignition system for a spark ignited engine, two separate magnets are used for generating the electrical energy supplied to the spark plug and for generating triggering signals applied to an electronic switch controlling the application of electrical energy to the spark plug. The system is a condenser discharge system wherein a main rotating magnet assembly generates a varying voltage in a generating coil positioned adjacent its path of movement. A condenser is connected with the generating coil through a rectifying means so as to be charged when the voltage induced in the generating coil is of one polarity. A silicon controlled rectifier controls the discharge of the condenser through the primary of a step-up transformer having its secondary winding connected to the spark plug. Triggering signals for the silicon controlled rectifier are provided by a separate stationary triggering magnet and coil assembly. A rotating piece of magnetic material moves past the triggering magnet and coil assembly to induce a triggering voltage in the triggering coil, the magnitude of which at different positions of the rotating piece is dependent on the speed of rotation so that at different engine speeds the triggering level of voltage is obtained at different positions of the rotating part to provide an automatic spark advance.

3,809,041

IGNITION DEVICE FOR USE IN MULTIPLE CYLINDER INTERNAL COMBUSTION ENGINE

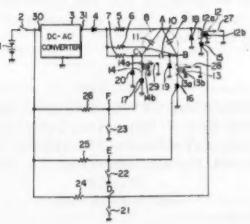
Mihoru Kato, and Masao Nagasawa, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya-shi, Japan

Filed June 20, 1972, Ser. No. 264,590

Claims priority, application Japan, June 24, 1971, 46-46164

Int. Cl. F02p 3/06

U.S. Cl. 123—148 E 14 Claims



Current from a DC power source charges a group of capacitors. The charges stored in the capacitors are then released through the primary windings of ignition coils and controlled rectifiers which are turned conductive when the gates thereof receives gating signals in synchronism with the ignition timing of the engine, which gating signals are produced by magnetic means to detect the ignition timing in response to the rotation of the crankshaft of the engine. And spark voltage are induced in the secondary windings of the ignition coils in an appropriate timing to fire the spark plugs connected with the secondary windings of the ignition coils.

3,809,042

INTERNAL COMBUSTION ENGINE EQUIPPED WITH MEANS FOR REDUCING THE AMOUNT OF NITROGEN OXIDE WHICH IS EXHAUSTED FROM THE ENGINE

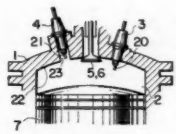
Yukio Hosho; Hisanori Moriya, both of Katsuta, and Yoshishige Oyama, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 22, 1971, Ser. No. 136,529

Claims priority, application Japan, Apr. 22, 1970, 45-33899; June 26, 1970, 45-55162

Int. Cl. F02p 3/06

U.S. Cl. 123—148 C 9 Claims



An internal combustion engine for vehicles equipped with means for reducing harmful exhaust gases, especially nitrogen oxide, in which a first ignition plug and a second ignition plug are so installed in the combustion space of the engine that the combustion characteristic of the first plug is superior to that of the second plug. Either or both of these plugs are differently operated in accordance with the nitrogen oxide content in the exhaust gas.

3,809,043

CONTACTLESS IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

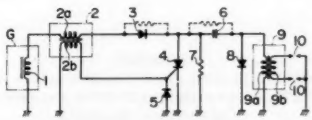
Masao Nagasawa, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya-shi, Japan

Filed Oct. 20, 1972, Ser. No. 299,452

Claims priority, application Japan, Oct. 22, 1971, 46-84212; Nov. 4, 1971, 46-87779; Feb. 2, 1972, 47-14005; May 31, 1972, 47-64290; June 13, 1972, 47-70094

Int. Cl. F02p 1/00

U.S. Cl. 123—148 E 48 Claims



A contactless ignition system for internal combustion engines comprising: at least one charging circuit including a series combination of a capacitor charging coil for generating an output by the rotation of a permanent magnet, rectifying means for rectifying the generated output of the capacitor charging coil and a capacitor, with the flow of current being directed from the capacitor charging coil to the capacitor through said rectifying means; at least one discharging circuit including a series combination of said capacitor and a thyristor having a gate to cause said capacitor to discharge its

stored charge upon conduction of said thyristor; at least one ignition coil having a primary winding and a secondary winding; and at least one transformer having at least one primary winding and secondary winding, respectively, with the primary winding electrically connected to said capacitor charging coil to thereby detect the generated output thereof, wherein the primary winding of said ignition coil is connected in series in said discharging circuit, wherein at least one spark plug is connected to the secondary winding of said ignition coil, and wherein the secondary winding of said transformer is electrically connected to the gate of said thyristor.

3,809,044

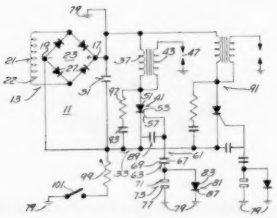
CAPACITOR TRIGGERED IGNITION SYSTEM

Richard F. Jereb, Lindenhurst, and Philip A. Anderson, Waukegan, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jan. 22, 1971, Ser. No. 108,887

Int. Cl. F02a 1/00

U.S. Cl. 123—148 E **12 Claims**



Disclosed herein is an ignition circuit ignition for an internal combustion engine, which circuit comprises a charge capacitor connected to the positive and negative terminals of a source of direct current generated in response to engine rotation, and an SCR connected to the charge capacitor in series with each other and in parallel with respect to the source and including an anode connected to the positive terminal, and a cathode connected to the negative terminal, and a gate, together with means for triggering the gate to discharge the charge capacitor including connection of the positive terminal to ground, a mechanical switch having a first grounded contact and a second contact electrically connectable to said first contact in response to engine rotation, and a trigger capacitor connected to the second switch and to the gate, whereby upon closing of the switch contacts, the charge capacitor is partially discharged through the contacts and through the trigger capacitor to trigger the gate, whereby to fully discharge the charge capacitor through the primary winding of an ignition coil connected in series with the SCR and the charge capacitor.

3,809,045

AUTOMATIC FLAME-STARTING INSTALLATION IN PARTICULAR FOR MULTI-FUEL INTERNAL COMBUSTION ENGINES

Gerhard Frankle, Grunbach, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

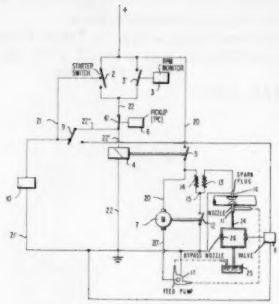
Filed Dec. 17, 1971, Ser. No. 209,314

Claims priority, application Germany, Dec. 18, 1970, 2062455

Int. Cl. F02m 17/00

U.S. Cl. 123—179 **12 Claims**

A fully automatic flame-starter installation, especially for multi-fuel internal combustion engines, which essentially consists of a fuel feed pump connected to a fuel-injection nozzle arranged in the suction pipe of the internal combustion engine within the area of a spark gap; the starting of the operation of the flame-starter installation takes place simultaneously with the starting of the internal combustion engine by way of a starter switch while the flame-starter installation is turned off automatically depending on the requirements of the starting conditions of the internal combustion engine and, if necessary, automatically starts up again.



3,809,046

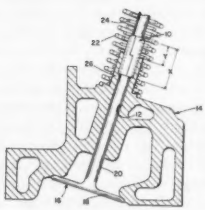
VALVE GUIDE STABILIZING AND SEALING INSERT

James A. Kammeraad, Holland, Mich., assignor to K-Line Industries, Inc., Holland, Mich.

Filed Sept. 1, 1972, Ser. No. 285,607

Int. Cl. F01l 3/08

U.S. Cl. 123—188 GC **19 Claims**



An insert for sealing and stabilizing the valve stem of a poppet valve in the upper portion of a valve guide of an internal combustion engine. The insert comprises a cylindrical steel jacket having an inner layer of Teflon bonded thereto. The inner diameter of the insert corresponds to the diameter of the valve stem and extends coaxially and forms a substantial continuation of the valve guide wall. The insert extends beyond the upper end of the valve guide a distance of about 25 to 50 per cent of its length for stabilizing the reciprocation of the valve stem in cooperation with the remainder of the valve guide while preventing excessive amounts of lubricating oil from entering the valve guide.

3,809,047

PROJECTING DEVICE HITTING MEANS

Alexander McD. Hess, 67 Hilton Ave., Garden City, N.Y.

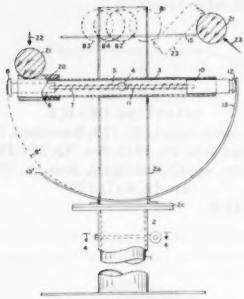
Continuation-in-part of Ser. No. 202,155, Nov. 26, 1971, Pat. No. 3,765,395. This application Sept. 22, 1972, Ser. No. 291,398

Int. Cl. F41b 3/00

U.S. Cl. 124—1 **7 Claims**

A ball projecting machine having a mounting base with a lever pivotally mounted on the base. A ball supporting device having a plurality of spaced ball holding positions is provided by a slotted mounting member. A braking surface is mounted

on the base and a spring biased brake shoe is mounted on one end of the lever to engage the braking surface. The lever is adapted to be rotated quickly to hit a ball mounted in one of



said holding positions. The apparatus is provided with sufficient structure for controlling the trajectory and horizontal direction of the projected ball.

3,809,048

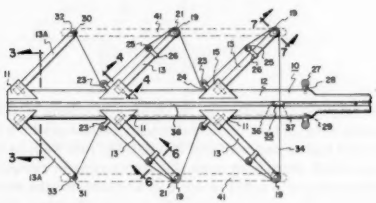
FORCE MULTIPLYING TYPE CROSS-BOW

Carl E. Handford, 1722 Burning Birch Ln., Mt. Prospect, Ill.

Filed June 20, 1972, Ser. No. 264,625

Int. Cl. F41b *5/00*

U.S. Cl. 124—25 **6 Claims**



A multiple-arm cross-bow is provided, the same having an elongate central bowstock portion and a plurality of arms extending on either side of the bowstock. The arms are connected together through a pulley construction by a bow-string and are so arranged that the force of the cocked bowstring is applied to the arrow missile over an elongated distance. When the bow-arms are cocked or bent rearwardly for but a short distance a greater average thrust and a multiplied force will be imparted to the arrow. A thrust is applied to an arrow over a longer relative distance but through a shorter interval of time.

3,809,049

APPARATUS FOR CUTTING ROUGH-SURFACED STONE BODIES

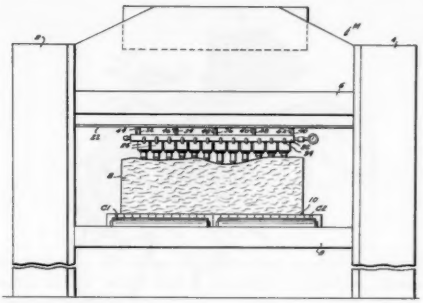
Ralph A. Fletcher, Bedford, N.H., and Joseph R. Oliver, Lowell, Mass., assignors to H. E. Fletcher Co., Westford, Mass.

Filed Dec. 1, 1971, Ser. No. 203,527

Int. Cl. B28d *1/32*

U.S. Cl. 125—23 C **4 Claims**

Rough-surfaced blocks of stone are cut into a number of smaller pieces of a desired thickness by means of specially designed guillotine cutting apparatus in which isostatically held cutting elements are engaged against an upper side of a block and cooperate with a lower set of cutting elements of conventional form engageable with the underside of the block to apply hydraulically actuated cutting forces. The invention method and apparatus provides for the isostatically held cutting elements being removably contained in a vertically adjustable retaining structure. Each of the cutting elements is specially designed to work against a very rough-surfaced block, for example, one having a top side presenting sloping



surfaces and projections whose deviations from a plane surface exceed the capacilities of conventional guillotine cutters. Spring means are combined with the cutting elements to provide rapid cutter positioning both during and after a cut is made and sides of the cutting elements are yieldably supported to absorb lateral displacement forces when angularly engaged against the sloping surface portions of the block.

3,809,050

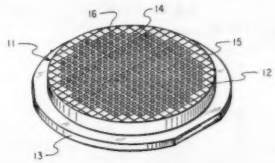
MOUNTING BLOCK FOR SEMICONDUCTOR WAFERS

Euiwon Chough; Frank T. Deverse, both of Wappingers Falls; Franz Konrad; John A. Kurtz, both of Hopewell Junction, and Russell C. Manchester, Beacon, all of N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.

Filed Jan. 13, 1971, Ser. No. 106,143

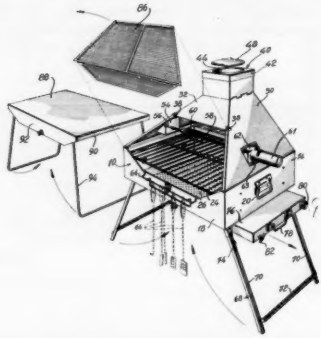
Int. Cl. B28d *7/04*

U.S. Cl. 125—35 **2 Claims**



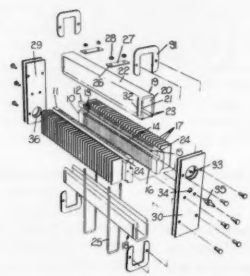
A mounting block carries a processed semiconductive wafer through subsequent steps, i.e., dicing, cleaning, testing and chip selection. The mounting block has a raised circular central portion to which the wafer is bonded by means of an adhesive. The central portion contains a plurality of apertures, each corresponding to and to be in registry with a device in the wafer to be mounted thereon. The apertures enable the wafer to be secured to the block without touching the device surface, by applying a vacuum to the backside. The apertures also permit later removal of only acceptable chips from the mounting block without loss of orientation. The central portion is also slotted to permit wafer to be diced without the blades touching the block surface or adhesive, whereby the block may be repeatedly reused and the blade has longer life. A lower circuit flange on the block is provided with a notch and flats, for alignment purposes using apparatus for mounting the wafer in precise alignment including a microscope. The mounting block is also supported in one o. several saws.

3,809,051
PORTABLE BARBECUE OVEN
Jean Louis Giroux, 645-23e Rue, App. 6, Quebec 3, Province of Quebec, Canada
Filed July 10, 1972, Ser. No. 270,200
Int. Cl. A47j *37/04;* **F24c** *1/16*
U.S. Cl. 126—9 R **8 Claims**



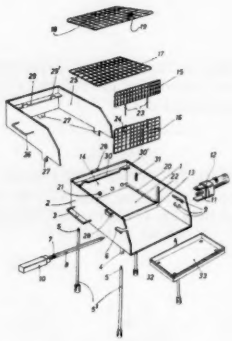
This invention comprises a portable barbecue oven in which the firebox cover is separate from the chimney structure, the latter fitting completely inside the firebox and the cover completely enclosing the firebox, so that all the soot coated elements and surfaces are out of sight and out of reach when the oven is in collapsed and packed condition.

3,809,052
HEATING APPARATUS
John Malcolm Ryffin-Hughes, 27 Witherford Croft, Solihull, Warwickshire; Brian Harding, 28 Arlington Rd., West Bronwich Staffs, and Graham Albert John Lake, 30 Green Acres, Birmingham, all of England
Filed Aug. 30, 1971, Ser. No. 176,229
Claims priority, application Great Britain, Aug. 29, 1970, 41696/70; Apr. 2, 1971, 8474/71; Apr. 2, 1971, 8475/71; May 18, 1971, 15512/71
Int. Cl. F24h *3/06*
U.S. Cl. 126—116 R **5 Claims**



This invention relates to heating apparatus for imparting heat to a fluid. The heating apparatus comprises combustion chamber means, and burner means at one side of the combustion chamber means. The burner means incorporates a plurality of inlet orifices through which a fuel/air mixture can enter the combustion chamber means, the heating apparatus having a plurality of outlet passages through which the products of combustion of the mixture when ignited can leave the combustion chamber means. The outlet passages are formed within a core of heat conducting material forming at least a part of a heat exchanger. The burner means and the combustion chamber means are arranged so that flames formed by ignition of the fuel/air mixture will be held at positions from which the major portion of the heat arising from combustion of the fuel/air mixture will be conducted through the core to the fluid to be heated.

3,809,053
ROASTING DEVICE
Jorge Roca Navarro, Lauria St. 123, Barcelona, Spain
Filed Sept. 25, 1972, Ser. No. 291,556
Claims priority, application Spain, June 26, 1972, 181929
Int. Cl. A47j *37/07*
U.S. Cl. 126—25 R **4 Claims**

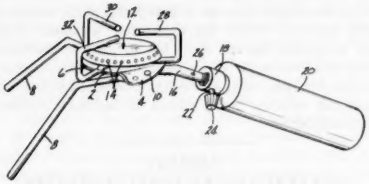


An improved roaster of the type comprising a cooking chamber formed by a rectangular body provided with a broad base wall and an end wall and two parallel side walls at 90°, in one of which there is an open slot terminating in circular supporting surfaces in order to serve as a bearing for the neck of a split that is disposed transversally to said chamber, said spit provided on one extremity with a handle and on the opposite extremity with an end portion connectible to and rotatably driven by an electric motor situated outside a cooking chamber and fixed at the side of same, wherein the body has a transversal partition of small height, extending upwardly from the base wall and spaced from the end wall to form a compartment therebetween for holding combustible material, a bottom grate seated on flanges of the side walls of the chamber and limited by said transversal partition, said bottom grate forming the bottom wall of the compartment, said bottom grate being spaced upwardly from said base wall and forming an ash collection chamber therebetween, a vertical grate situated in vertical guides on the side walls of the chamber and forming the front side of the compartment.

3,809,054
COLLAPSIBLE CAMP STOVE
Cader E. Bowman, Sycamore, and Daniel W. Lapins, Dekalb, both of Ill., assignors to Olin Corporation, New Haven, Conn.
Filed Dec. 11, 1972, Ser. No. 313,901
Int. Cl. F24c *5/20*
U.S. Cl. 126—38 **2 Claims**

A campstove of the collapsible variety having preferably three point support. Two pivotable legs provide two of the points of support for the stove and the fuel container provides the third point of support. Burner means for the stove is

mounted on a bracket as are the two stove legs. Utensil supports are sandwiched between the burner means and the



bracket and are pivotable between operative and inoperative positions. The stove can be collapsed for storage without use of special tools.

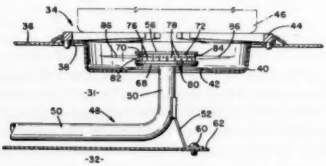
3,809,055
BURNER CAP ASSEMBLY

Albert F. Craver, Bay Village, Ohio, assignor to Aurora Corporation

Continuation of Ser. No. 36,907, May 5, 1970, Pat. No. 3,625,196. This application Dec. 6, 1971, Ser. No. 209,634. The portion of the term of this patent subsequent to Dec. 7, 1988, has been disclaimed.

Int. Cl. F24c *3/00*

U.S. Cl. 126—39 H **10 Claims**



A combination of a steel burner cap, a burner cap mounting plate and a mixing tube. One end of the tube is adapted for connection to a gas manifold and the other end is connected to the mounting plate. Unobstructed openings intermediate the ends of the tube allow air to be aspirated when gas is injected from the manifold. The cap may be crimped to the plate for assembly tightness. Gas and primary air pass from the tube into the cap for further mixing while flowing radially out within the cap and subsequently through a plurality of ports. Ledges on the cap both above and below the ports extend radially outwardly to provide a flame shielding annular recess at the outer extent of the ports.

3,809,056
SMOKE PRODUCERS

Aubrey Francis Snelling, White House, Kemp Rd., Swanland, North Ferriby, East Yorkshire, England

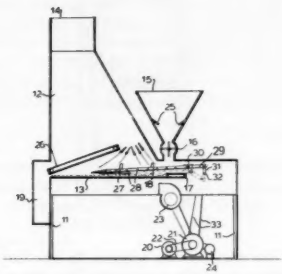
Filed Jan. 10, 1972, Ser. No. 216,733

Claims priority, application Great Britain, Jan. 12, 1971, 1353/71

Int. Cl. A23b *1/04*

U.S. Cl. 126—59.5 **18 Claims**

A smoke producer comprising a smoke box, having a smoke outlet at its upper regions, a grate within the smoke box and a rake mechanism capable of being reciprocated to rake fuel, such as sawdust or peat, burning on the grate. The producer includes a feed hopper and fuel dispensing means by which



fuel is fed to the grate in a controlled manner and the air supply to the smoke box is controlled to obtain optimum smoke production.

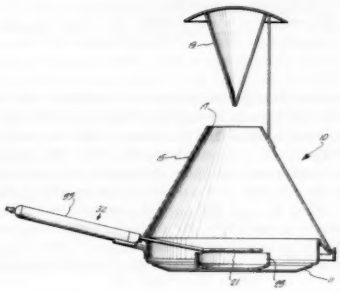
3,809,057
ORCHARD HEATER

Robert Ray Frost, 1070 E. Verdugo Ave., Burbank, Calif.

Filed Dec. 18, 1970, Ser. No. 99,409

Int. Cl. A01g *13/06*

U.S. Cl. 126—59.5 **11 Claims**



An orchard heater is disclosed having a dome-shaped combustion chamber with a conical deflector mounted above the dome adjacent the exhaust port. The deflector functions to direct rays of radiant energy radially outward in a horizontal plane directly to the boles of the trees located nearby. The burner assembly of the heater also includes an intermediate chamber which functions to relieve the back-pressure generated to the burner during ignition and provide a continuous flow of fuel to the burner at all times.

3,809,058
FIREPLACE UNIT

Alvin L. Becker, 3109 Carnegie Pl., San Diego, Calif.

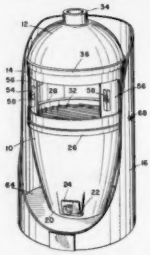
Filed Mar. 5, 1973, Ser. No. 337,900

Int. Cl. F24b *1/18*

U.S. Cl. 126—120 **10 Claims**

A fireplace unit having upper and lower enclosing portions of ceramic material, joined by a girth band which incorporates circumferentially sliding doors. The lower portion comprises a firebox and contains a grille which is readily accessible through the doors, the upper portion being a vented

cover. The unit can be floor or wall mounted, the mounting including a reflective shield which remains cool and allows close



spacing of the unit from its support. In one form the lower firebox portion is readily removable. The unit is firmly supported and is particularly suitable for use on a boat.

3,809,059

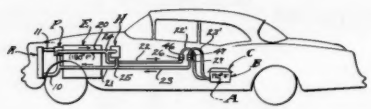
COOLANT HEATED OVEN FOR USE WITH VEHICLE ENGINES

Robert L. Burk, 417 S. Lucerne Blvd., and Jack G. Hotchkiss, 418 S. Arden Blvd., both of Los Angeles, Calif.

Filed Nov. 17, 1972, Ser. No. 307,381

Int. Cl. F24b *1/00*

U.S. Cl. 126—19.5 **3 Claims**



A moderate heat oven for use in vehicles and safely operated by the passage of engine coolant therethrough and adapted to bring foods to and to maintain food at serving temperature. The oven is a unit separable from the engine to which it is connected by quick detachable couplers and is thereby made portable, and is insulated for retaining a heated condition; all to the end that normal internal combustion engine operation in the 175°–180° F. coolant heat range maintains a "ready to serve" oven temperature of approximately 170° F. and which is retained at a slow rate of temperature drop.

3,809,060

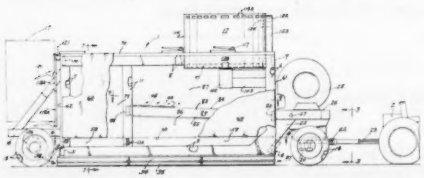
MOBILE BURNING APPARATUS FOR AGRICULTURAL USE

Howard E. Shirley, Eugene, and Jackie L. Jensen, La Grande, both of Oreg., assignors to Turbo Cycle Company, Inc., Eugene, Oreg.

Filed Mar. 2, 1973, Ser. No. 337,300

Int. Cl. F23c *5/00*

U.S. Cl. 126—271.2 C **17 Claims**



A wheel supported apparatus with a battery of gas fired burners discharging into ground contact for igniting vegetable matter thereon. Air is supplied to the interior of the closed vehicle framework by conduits in close proximity to and discharging onto the ground. A blower delivers a constant airflow to the conduits via hollow framework members. An exhaust fan discharges through a detachable stack resulting in a negative pressure within the apparatus. Insulated walls are further protected against heat by an airflow therethrough resulting from the negative internal pressure. An internal barrier within the apparatus routes the combustion flow along a reverse path with air being added during such combustion, through said barrier.

3,809,061

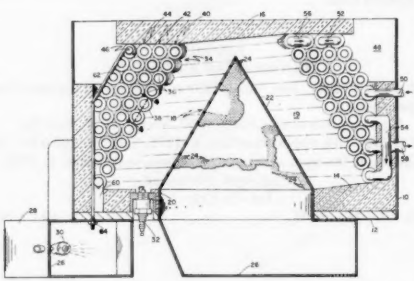
HEAT EXCHANGER AND FLUID HEATER

Joseph Gerstmann, Sudbury, Mass., assignor to Steam Engine Systems Corporation, Newton, Mass.

Filed Nov. 3, 1971, Ser. No. 195,235

Int. Cl. F23d *13/24*; **F24d** *17/00*

U.S. Cl. 126—350 R **11 Claims**



A heat exchanger is provided with a matrix of successive coils of finned tubing for the fluid to be heated which are each wound into the form of a truncated cone, the coils being closely wound and packed together so that fins of turns of each pair of coils are in at least approximate engagement with fins of two turns of the same coil and two turns of the other coil of the pair. A fluid heater incorporating such heat exchanger has a combustor with a correspondingly conical wall located coaxially within the exchanger and provided with a multiplicity of small apertures for directing flames of ignited fuel toward the matrix.

3,809,062

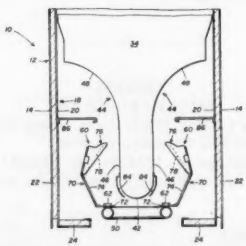
COOKING SYSTEM

Lewis Frank Moore, and George McNair Price, both of Shreveport, La., assignors to The Frymaster Corporation, Shreveport, La.

Filed Feb. 4, 1972, Ser. No. 223,443

Int. Cl. A47j *27/00*

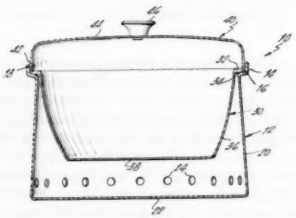
U.S. Cl. 126—369 **11 Claims**



A cooking system includes a frypot comprising heat transfer walls which are spaced to facilitate cleaning of the frypot.

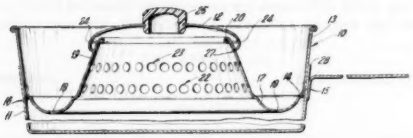
Each heat transfer wall comprises a lower vertically extending portion and an upper outwardly curved portion shaped to cause wastes to flow to the bottom of the frypot. A plurality of burners are provided for maintaining combustion in zones adjacent to the vertically extending portions of the heat transfer walls. This causes heated products of combustion to flow upwardly along the vertically extending and outwardly extending portions of the heat transfer walls, whereby heat transfer is effected through the walls to cooking oil in the frypot. Each burner comprises two or more orifices for discharging mutually interacting gas jets and a target for deflecting the gas jets and entrained air toward the heat transfer walls and for reflecting heat into the combustion zone and through the heat transfer walls. Baffles are provided for preventing recycling of the products of combustion into the combustion zone and for maintaining the cooking oil in the bottom of the frypot relatively cool.

3,809,063
WATERLESS COOKING POT
Steven Hajnal, 5600 Riverdale Ave., New York, N.Y.
Filed Nov. 10, 1972, Ser. No. 305,224
Int. Cl. A47j *27/00*
U.S. Cl. 126—373 **3 Claims**



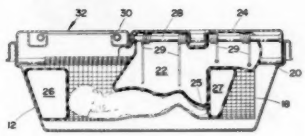
A waterless cooking pot comprising a small pot resting inside of a larger pot and a cover for both pots. The larger pot has a series of holes near the bottom.

3,809,064
VESSEL COVER
Charles O. Ziegler, East Marion, N.Y., assignor to Herman Kanfer, Plainview, N.Y., a part interest
Filed July 11, 1972, Ser. No. 270,670
Int. Cl. A47j *27/00*
U.S. Cl. 126—381 **3 Claims**



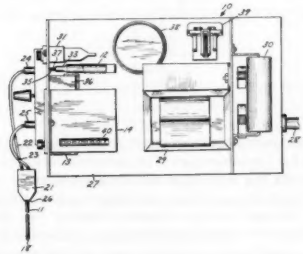
A cover for a vessel wherein liquids are boiled includes a circular member and a cap. The circular member includes a conical wall which is frictionally engageable with the vessel and an annular extension having a first and second arcuately spaced series of holes. The annular extension runs into a semicircular annular groove having a number of circularly spaced holes, and the small diameter edge of the groove extends into the large diameter end of a second conical wall having a plurality of holes. The small diameter end of the second conical wall provides an access to the contents in the vessel. The cap includes a plurality of holes, a handle, and a large hole whose edge is frictionally engageable with the second conical wall to securely cover the access. When a liquid boils in the vessel, its vapor is vented to the atmosphere through the plurality of holes in the cap, and its foaming liquid is vented through the plurality of holes in the conical wall to the atmosphere and the groove. The resulting condensed liquid is returned through the number of holes in the groove to the vessel, thereby preventing the liquid in the vessel from boiling over the vessel's edge. The first and second arcuately spaced series of holes prevent the boiling liquid from disengaging the vessel and the cover.

3,809,065
INFANT ENVIRONMENTAL TRANSITION SYSTEM
James D. Gatts, 4625 E. Louisiana No. 201, Denver, Colo.
Filed Apr. 5, 1971, Ser. No. 131,126
Int. Cl. A61b *19/00*
U.S. Cl. 128—1 R **13 Claims**



The disclosed infant environmental transition system relates to the method and apparatus for providing an infant with an incrementally controlled, healthy transition from its intauterine environment as it exists near birth to the extrauterine environment. The apparatus comprises a housing within which the infant is supported on a sling-like member. Means are provided to initially generate environmental conditions within the housing simulating the intrauterine environment and to alter this environment in controlled incremental steps to a normal extrauterine environment. Said means provide and control the tactile sensations perceived by the infant; the temperature and humidity within the container; the degree of movement imparted to the housing, which in turn is imparted to the infant; the degree of light perceived by the infant; and an audio profile which initially simulates intrauterine cardiovascular and gastro-intestinal sounds and gradually transitions to normal extrauterine sounds.

3,809,066
MEDICAL SENSOR DEVICE FOR LOCATING CALCULI IN BODY CAVITIES
Donald R. Krawitt, Rock Ledge Rd., Rye, N.Y.
Filed Feb. 3, 1972, Ser. No. 223,184
Int. Cl. A61b *5/06*
U.S. Cl. 128—2 R **2 Claims**



A device for detecting the presence of kidney stones, gallstones and the like in situ within a body cavity. The device includes a fiber optic light conducting probe, the free end of which is introduced into a duct leading to the suspected cavity. Where the free end contacts tissue or organic matter, light

emanating from the tip of the probe is diffused into the material. However, where the free end contacts inorganic material, the light is not diffused, but is reflected back through the probe to be sensed at the opposite end thereof, thus giving an indication of the presence of such material.

3,809,067

MODULATION RESPONSIVE ANTI-EVASION SYSTEM FOR BREATH TESTERS

Joseph P. Hoppesch, Streamwood, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed June 7, 1972, Ser. No. 260,603

Int. Cl. A61b *5/00*

U.S. Cl. 128—2 C **2 Claims**

An anti-evasion system is disclosed for breath alcohol testers including a sound transducer and filter network that distinguishes between the presence and absence of human modulation of the breath sample (such as humming) and prevents a gas sample not obtained in conjunction with such modulation from indicating a "pass".

3,809,068

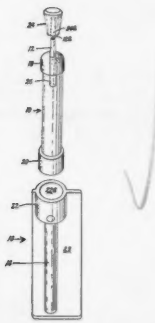
CONTAINER UNIT FOR LIQUID SAMPLE

David I. Kosowsky, Newton Centre, Mass., assignor to Damon Corporation, Needham Heights, Mass.

Continuation of Ser. No. 191,949, Oct. 22, 1971, abandoned. This application Feb. 16, 1973, Ser. No. 333,003

Int. Cl. A61j *1/00*

U.S. Cl. 128—2 F **10 Claims**



This invention relates to an improvement in disposable container units for liquid samples. The container units are particularly useful for the collection of blood specimens. The container unit includes an elongated compressible bulb member having an integral nozzle attached thereto. An elongated storage volume or compartment having a closed and an open end and a small cross sectional area is also provided, the open end being in communication with the bulb member. If the container unit is held vertically upward, liquid in the bulb will not flow freely into the storage volume because of its small cross sectional area. Similarly, if the storage volume contains liquid and is turned upside down, the liquid will not flow from it into the bulb. The improvement comprises a re-entrant tube extending from the nozzle opening into the compressible bulb to prevent aspiration of liquid in the bulb and to provide means for measuring the volume of sample in the container and for expelling excess sample.

3,809,069

APPARATUS AND METHOD FOR MEASURING INTELLIGENCE

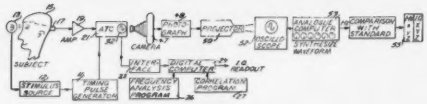
William Frederick Bennett, 940 15th St., West Vancouver, B.C., Canada

Continuation-in-part of Ser. No. 95,874, Dec. 7, 1970, abandoned, which is a continuation of Ser. No. 741,194, June 28, 1968, abandoned, which is a continuation-in-part of Ser. No. 569,328, Aug. 1, 1966, abandoned. This application Mar. 22, 1972, Ser. No. 236,841

Claims priority, application Great Britain, Aug. 4, 1965, 33284/65

Int. Cl. A61b *5/04*

U.S. Cl. 128—2.1 B **11 Claims**



Apparatus and method for measuring intelligence of a subject exposed to pulsed stimuli which stimuli evoke sensory response in subject. Response is detected, amplified and signal-to-noise ratio increased producing improved signal with increased legibility. Signal is recorded and is analyzed to determine a dominant fundamental frequency which is related to intelligence of the subject. Frequency so obtained is compared with frequencies obtained from other subjects of known intelligence so as to obtain measure of intelligence of first subjects. Other subjects have been previously tested by prior art intelligence tests and have also been tested by instant invention so as to obtain relationship between intelligence and record of improved signal. Use of computer for analysis and comparison permits relatively quick measurement of intelligence.

3,809,070

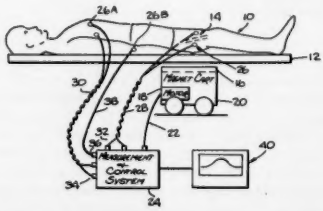
NON-INVASIVE ELECTROMAGNETIC BLOODFLOW MEASURING SYSTEM WITH REJECTION OF NOISES

Henri Georges Doll, New York, and Hans J. Broner, Glendale, both of N.Y., assignors to Doll Research, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 158,697, July 1, 1971, Pat. No. 3,759,247, which is a continuation-in-part of Ser. No. 66,240, Aug. 24, 1970, Pat. No. 3,659,591. This application Oct. 11, 1972, Ser. No. 296,677

Int. Cl. A61b *5/02*

U.S. Cl. 128—2.05 F **39 Claims**



A non-invasive measuring system adapted to measure arterial blood flow in human beings is provided. A stable, strong

magnetic field is produced in the region of the artery under measurement by a magnet suitably positioned near the human being. A mechanical means moves the magnet away from its normal position or back to such position. The blood flow induced signals, which are pulsatile, are sensed by electrodes placed on the skin adjacent to the artery. Mixed with the blood flow signals are the local electrocardiogram signals. In addition, the electrodes also pick up random noises which are not synchronized with the heart. The signals are amplified and processsed by a repetitive waveform averager which is synchronized by a cardiogram signal obtained from auxiliary electrodes. The waveform averager accumulates a first predetermined number of composite pulsatile signals from said measuring electrodes during a first series of heart cycles occurring when the magnetic field is produced in the region of the artery, and accumulates an equal number of composite pulsatile signals from said measuring electrodes during a second series of heart cycles occurring when the magnetic field in the region is suppressed. A signal selector includes a comparator connected at the input of the waveform averager for comparing each incoming pulsatile signal with predetermined acceptable signal characteristics, so that the incoming pulsatile signal will be accumulated by the waveform averager only if it is accepted by the signal selector. The waveforms registered in the waveform averager respectively during the first and the second series of heart cycles are subtracted from each other to obtain the blood flow pulse substantially free from electrocardiogram and random noise influence.

3,809,071

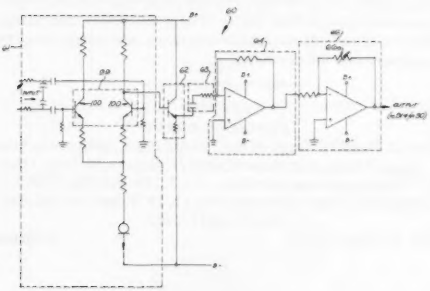
METHODS AND MEANS FOR THE DETECTION AND IDENTIFICATION OF LOW LEVEL COMPONENTS OF THE ELECTROCARDIOGRAM COMPLEX WITHOUT LOSS OF REFERENCE TO THE HIGHER LEVEL COMPONENTS

Dominick D. Davolos, 176 W. McMillan St., Cincinnati, Ohio; Jerry B. Denker, 9458 Galecrest Dr., Cincinnati, Ohio, and Phillip A. Davolos, 106 Lafayette La., Audubon, N.J.

Filed Feb. 18, 1972, Ser. No. 227,463

Int. Cl. A61b *5/04*

U.S. Cl. 128—2.06 B **18 Claims**



By this invention, and by the use of well known electronic circuitry, low level electric signals may be progressively amplified without loss of reference to other signals, with retention of strict linearity and without damage to recording equipment, by non-invasive methods utilizing electrodes on the exterior human body surface. This is accomplished by the physical method of this invention which incorporates a high gain, low noise, high common mode rejection amplifier with a variable gain control and a preset sharp cut off saturation level. Using this mechanism, low level signals (*p,q,s*) can be gradually increased in gain until they are prominently displayed at the same level as a typical electrocardiogram high level signal (Q,R,S) would have been displayed. In the application of this amplifier to the electrocardiography, it is demonstrated that the P-wave may be amplified to a height of 20 mm. on a standard electrocardiograph paper. In this way the relationship of the P-wave to the Q,R,S may be readily determined and diagnosis of abnormal heart rhythms may be greatly facilitated.

3,809,072

STERILE SHEATH APPARATUS FOR FIBER OPTIC ILLUMINATOR WITH COMPATIBLE LENS

Robert A. Ersek; Donald E. Wall, and Michael C. Garity, all of Minneapolis, Minn., assignors to Med General Inc., Minneapolis, Minn.

Filed Oct. 7, 1971, Ser. No. 187,297

Int. Cl. A61b *1/06; A61n 5/06*

U.S. Cl. 128—23 **7 Claims**

A sterile sheath for enclosing certain surgical illuminating lamp structures having elongated light-transmitting shafts with a light-transmitting lens means disposed at the tip end of the light-transmitting shaft. The sheath means of the present invention comprises an elongated tubular sheath having a closed end with a lens element secured to and forming a portion of the closed end, and with an opening at the other end thereof, the tubular sheath having sufficient length to cover that portion of the light-transmitting shaft having a sterile requirement. The light-transmitting lens element at the tip end is adapted to be disposed in series with a lens arranged on the light-transmitting shaft. The sheath has a pair of generally axially extending slots formed adjacent the open end to form a pair of grasping ears, with one of the axially extending slots having a length in substantial excess of the other in order to provide the grasping ears with substantial asymmetry.

3,809,073

APPLIANCE FOR BUBBLING COMPRESSED AIR THROUGH A LIQUID, PARTICULARLY WATER IN A BATHING TUB AND THE LIKE

Ludwig Baumann, Niederhelfenschwil, Sankt Gallen, Switzerland

Filed Mar. 27, 1973, Ser. No. 345,423

Claims priority, application Germany, June 20, 1972, 2229973

Int. Cl. A61h *9/00*

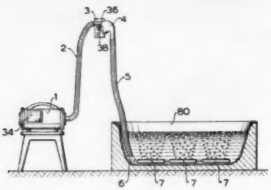
U.S. Cl. 128—66 **11 Claims**

An appliance for bubbling compressed air through a liquid, particularly water in a bathing tub and the like, comprises compressed-air generating means such as a blower, compressor and the like for blowing compressed air into a controllable air bubble generating mat immersed in the liquid through an air hose incorporating means for preventing liquid from flow-

ing back into the compressed-air generating means. The appliance is characterized by the combination of the following features:

i. the compressed-air generating means are contained in a synthetic plastics casing which completely encloses the same, contains control means and has an opening closable by a preferably hinged insulating cover;

ii. the air hose leads from the compressed-air generating means in the synthetic plastics casing to an air distributor head of the air bubble generating mat and comprises two



separate lengths of hose joined together by a horizontally or vertically located connector, preferably an angular connector, which is airtight only when located at a given level above the air bubble generating mat,

iii. the air bubble generating mat comprises several longitudinally joined caterpillar-like elements and is traversed in its lengthwise direction by a plurality of perforated air tubes connected to the air distributor head which permits compressed air permanently to be selectably admitted into said perforated air tubes.

3,809,074

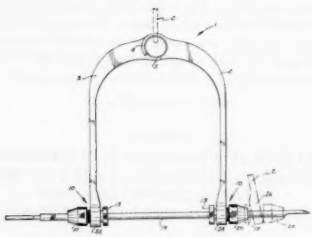
PIN ATTACHMENT MEANS FOR SURGICAL BOW

Adrian J. De Moude, 8505 S.W. Cecilia Ter., Portland, Oreg.

Filed May 24, 1973, Ser. No. 363,378

Int. Cl. A61f *5/04*

U.S. Cl. 128—84 R **4 Claims**



Attachment means for securing bow extremities to the bone penetrating member. Included in the attachment means is a slotted component closeable into gripping engagement with a segment of the bone penetrating member to hold same against axial movement and accidental separation. Conveniently sized fingergrips permit installation or removal of the present attachment means without tools.

3,809,075

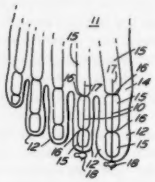
BONE SPLINT

Arthur L. Matles, 59 East 78th St., New York, N.Y.

Filed Mar. 29, 1973, Ser. No. 345,861

Int. Cl. A61f *5/04*

U.S. Cl. 128—92 A **3 Claims**



Bone splints are provided which include a wire or pin with an easily attachable and detachable retainer or retainers secured thereto, which splints do not migrate into the bones or tissue of the person undergoing treatment.

3,809,076

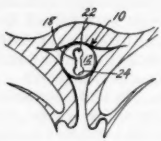
INTRAUTERINE CONTRACEPTIVE DEVICE

Irwin Chabon, 500 East 77th St., New York, N.Y.

Filed June 16, 1971, Ser. No. 153,754

Int. Cl. A61f *5/46*

U.S. Cl. 128—130 **9 Claims**



An intrauterine contraceptive device having a closed perimeter and an interior opening of limited size to prevent catching of a loop of bowel in the event that the device perforates the uterus. The device is of a thin wafer, disc design and is made of silicone rubber elastomer. A steel band may be impressed into the perimeter.

3,809,077

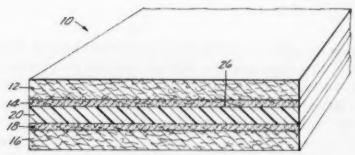
SURGICAL DRAPE

Paul E. Hansen, Village of Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 7,109, Jan. 30, 1970, abandoned. This application May 11, 1972, Ser. No. 252,368

Int. Cl. A61f *13/00*

U.S. Cl. 128—132 D **6 Claims**



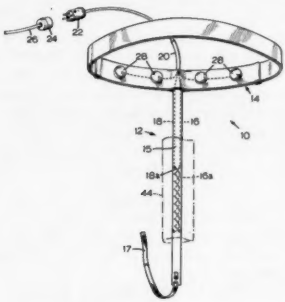
A surgical drape is constructed of two layers of thin, absorbent, compacted web of randomly interlaced, staple textile fibers having disposed therebetween a thin drapable, imprevious sheet of a thermoplastic film which is adherently bonded to the absorbent sheet across the contacting surfaces thereof

by means of a soft latex adhesive. The bonding is such that the absorbent sheet and film are not readily separable at any point across the contacting surfaces which results in a surgical drape having substantially improved strength, wet strength, and abrasion-resistance.

3,809,078
DETECTOR DEVICE FOR DETECTING UNINTENTIONAL URINATION

Alexander Mozes, 301 Lesmill Rd., Don Mills 405, Ontario, Canada

Filed July 20, 1972, Ser. No. 273,443
Int. Cl. A61b *19/00*; **A41b** *13/02*
U.S. Cl. 128—138 A **9 Claims**

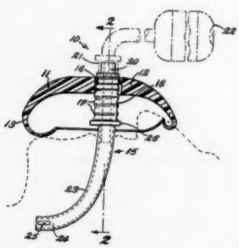


Devices for detecting unintentional urination are well known. However, they have generally employed complex detector electrode means. The detector electrode means of the present invention is extremely simple, employing a narrow strip of plastic material with electrodes woven through the body of the strip and extending outwardly from the strip in spaced relationship over a predetermined length of the strip spaced inwardly from the end of the strip. The electrodes are covered by a water pervious cover. The cover serves to act as a barrier between the metal electrodes and the wearer. The cover may be in the form of a disposable paper sleeve.

3,809,079
RESUSCITATOR

Philip M. Buttaravoli, Cincinnati, Ohio, assignor to E-Med Corporation, Cincinnati, Ohio

Filed Sept. 14, 1972, Ser. No. 289,068
Int. Cl. A61m *16/00*
U.S. Cl. 128—145.7 **5 Claims**

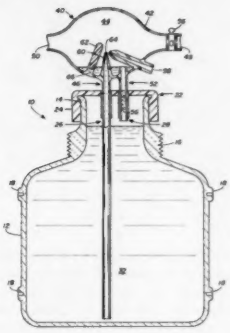


This invention is directed to a resuscitator having a combined face mask and air-way that is particularly useful in hospital emergency rooms and which facilitates the manual placement and subsequent ventilation of a patient's lungs in a positive and reliable manner.

3,809,080
STERILE LIQUID ENTRAINING SYSTEM

David W. Deaton, Dallas, Tex., assignor to Deaton Medical Company, Burns Flat, Okla.

Continuation of Ser. No. 57,028, June 24, 1970, abandoned.
This application Sept. 5, 1972, Ser. No. 286,085
Int. Cl. A61m *11/02*
U.S. Cl. 128—194 **4 Claims**



A sterile liquid entraining system includes a vapor generator and a liquid container. Initially, the container is sterilized and is filled with a sterile liquid. Then, the vapor generator is connected to the container and the sterile liquid is fed from the liquid container into the vapor generator. As the liquid flows from the container into the vapor generator, the container is filled with a sterile gas, preferably by directing the gas through a microorganism impervious filter. Because the sterile liquid in the container is replaced with a sterile gas, the sterility of the interior of the container is maintained throughout the operation of the vapor generator.

3,809,081
OBTURATOR

James C. Loveless, Sandy, Utah, assignor to Deseret Pharmaceutical Company, Inc., Sandy, Utah

Filed Feb. 4, 1970, Ser. No. 8,577
Int. Cl. A61m *5/00, 5/32*
U.S. Cl. 128—214.4 **2 Claims**

A device for selectively occluding the flow of fluid through an indwelling catheter, the device having an elongated stem adapted to be interposed snugly within the catheter, a handle with opposed generally flat sides and luer coupling structure for releasibly connecting the device to the catheter.

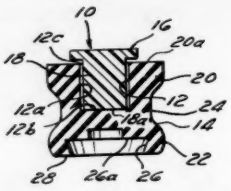
3,809,082
PLUNGER TACK

Alfred A. Hurschman, Hudson, Ohio, assignor to Ampoules, Inc., Macedonia, Ohio

Filed Dec. 30, 1971, Ser. No. 213,902
Int. Cl. A61m *5/22*
U.S. Cl. 128—218 P **9 Claims**

There is provided a plunger tack for transmitting driving force to a deformable plunger adapted to be disposed in a

compressed configuration in sliding, sealing engagement within a medicament containing chamber of a hypodermic device. The tack includes a rearwardly exposed flange for engagement with a driving member such as a movable piston, and an axially extending shank received within a recess in the plunger and retained therein solely by frictional forces when



the plunger is in the compressed configuration. The shank is arranged to transmit the driving forces to a forward portion of the plunger to provide the plunger with an elongated, deformed configuration of reduced lateral dimensions and to thereby reduce the static frictional force developed between the plunger and sidewall of the chamber.

3,809,083

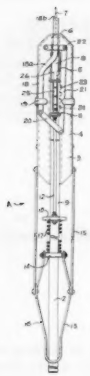
TOOL FOR ADMINISTERING INJECTIONS TO LIVESTOCK

Melvin George Westergaard, 5304-121 Ave., Edmonton, Alberta, Canada

Filed July 13, 1972, Ser. No. 271,583

Int. Cl. A61m *5/20*

U.S. Cl. 128—218 F **2 Claims**



The tool includes a long handle carrying a syringe at one end. A spring-biased carriage moves longitudinally along the handle to push the syringe plunger from the loaded position to the discharged position. A catch holds the carriage at the loaded position. A lever is provided to release the catch; the end of the lever is positioned adjacent the tip of the syringe needle. When the needle is jabbed into the animal, the lever is biased rearwardly and releases the catch so that the carriage moves to discharge the syringe contents. The tool enables the stockman to quickly administer an injection to an animal from a distance of 5 or 6 feet.

3,809,084

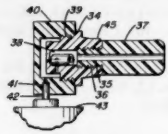
PRESSURIZED PORTABLE DISPENSER

Lloyd Frank Hansen, Campbell Hall, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 11,555, Feb. 16, 1970, Pat. No. 3,653,380. This application Feb. 8, 1972, Ser. No. 224,497

Int. Cl. A611 *13/00*; **A61m** *15/08*

U.S. Cl. 128—266 **1 Claim**



A portable powder dispensing device has a medicament chamber in which a dose of powdered medicament in an open capsule shell is introduced and an outlet to cooperate with a human body cavity, such as a mouthpiece or a nozzle for inserting in a nostril. A jet of gas under pressure, from a propellant tank is introduced into the chamber at a swirl angle. The shell containing the medicament vibrates and spins thereby breaking up the particles or aggregates.

3,809,085

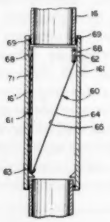
SURGICAL DRAINAGE SYSTEM

Robert E. Bidwell, Melville, and Leonard D. Kurtz, Woodmere, both of N.Y., assignors to Deknatel, Inc., Queens Village, Long Island, N.Y.

Filed May 23, 1972, Ser. No. 256,158

Int. Cl. A61f *5/44*; **A61m** *1/00*

U.S. Cl. 128—275 **16 Claims**



A surgical drainage system including a container for collecting fluid drained from a cavity, such as a pleural cavity, and a drainage tube for placing the container in fluid communication with a cavity to be drained, is provided with a check valve in the drainage tube. The check valve permits the flow of fluid from the cavity to the container and prevents the flow of fluid in the opposite direction thus permitting the development of a high negative pressure in the cavity. The check valve comprises an elongate tapered tube which can be positioned inside the drainage tube with its wide end towards the cavity. The tapered tube is provided with an elongate slot lengthwise of the tube to form a liquid flow passage, the edges defined by the slot being sufficiently flexible to permit fluid to pass outwardly therethrough and to close on being subjected to a negative pressure within said tapered tube to permit the development of a high negative pressure therein.

3,809,086

WOUND DRAINAGE DEVICE

Eli Schachet, and Fritz Deuschle, both of St. Louis, Mo., assignors to Sherwood Medical Industries Inc., St. Louis, Mo.

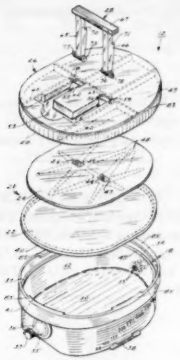
Filed Dec. 9, 1971, Ser. No. 206,307

Int. Cl. A61m *1/00*

U.S. Cl. 128—278 **23 Claims**

A portable, wound drainage, suction pump for extracting body fluids from wounds has a substantially rigid vessel, a top plate carrying an actuator member, a resilient diaphragm

disposed in the vessel and defining with the lower portion of the vessel an expansible chamber, and an actuating plate on the diaphragm adapted to be urged downwardly by an applied force on the actuator member to move the diaphragm downwardly and evacuate air from the expansible chamber. Upon removal of the applied force, the diaphragm tends to

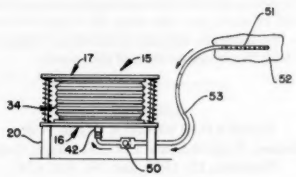


return to its original position due to the resiliency thereof, and while it is moving to expand the chamber, it produces a negative pressure for drawing fluid into the chamber. Cooperating latching elements are provided to maintain the diaphragm in the evacuated position without manual forces being applied thereto, the pump being unlatched to activate it when it is desired to start the drawing of fluid into the chamber.

3,809,087
CLOSED WOUND SUCTION APPARATUS HAVING BIASED PLATE MEMBERS

Royce C. Lewis, Jr., 5233 W. 19th, Lubbock, Tex.

Filed May 17, 1973, Ser. No. 361,026
Int. Cl. A61m *1/00*
U.S. Cl. 128—278 **10 Claims**



Continuous suction apparatus for post operative wounds comprised of contiguous plates superimposed upon one another in aligned relationship, and having guide means associated therewith so that a distracting force biases the plates apart from one another. A disposable, collapsible bag has opposed faces thereof removably affixed to the adjacent faces of the plate members so that when the plates are pulled apart by the distracting force, a reduced pressure is effected within the interior of the bag.

A disposable plastic tubing is placed in communication with the interior of a wound and the interior of the bag so that any secretion formed within the wound is immediately withdrawn into the sterile disposable bag, thereby greatly facilitating healing of the wound.

3,809,088
HYDROLYTICALLY UNSTABLE POLYURETHANE COTAMENIAL DEVICES

Donald Aloysious Ulrich, Jr., Cincinnati, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 272,594, July 17, 1972. This application June 21, 1973, Ser. No. 372,140
Int. Cl. A61f *13/20*
U.S. Cl. 128—285 **1 Claim**

Water-disintegratable, sewerage disposable, polyurethane foams wherein the conventional polyol reactant is replaced in whole or in part with a hydrolytically unstable polyester polyol, said foams being especially adapted to use in personal hygienic articles.

3,809,089
DIAPER

Bengt Hedstrom, Inspectorsbacken 59, and Ebbe Hoden, St. Eriksgatan 67, both of Stockholm, Sweden

Continuation of Ser. No. 146,796, May 26, 1971, abandoned, which is a continuation-in-part of Ser. No. 783,612, Dec. 13, 1968, abandoned. This application May 8, 1973, Ser. No. 358,380
Int. Cl. A41b *13/02*
U.S. Cl. 128—287 **3 Claims**

A diaper including a thin and flexible plastic back sheet or swaddle contoured and dimensioned to enable a person handling an infant to adjust it without requiring a separate fastening means. The back sheet is provided with a lining of liquid penetratable nature, the lining preferably extending over and covering the entire inner fact of the back sheet. An absorbent wadding or pad is interposed between the lining and the back sheet.

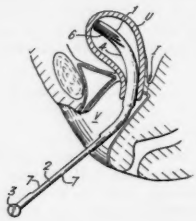
3,809,090
RUBBER ARTICLE

Lawrence J. Povlacs, and William B. Crawley, both of Dothan, Ala., assignors to Akwell Industries, Incorporated, Dotham, Ala.

Filed Sept. 21, 1972, Ser. No. 290,870
Int. Cl. A61f *5/42*
U.S. Cl. 128—294 **7 Claims**

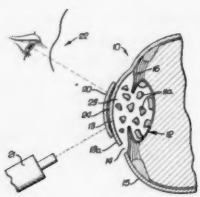
A prophylactic device comprising a membrane-like tube having peripherally extending projections integrally formed therein is provided.

3,809,091
SURGICAL INSTRUMENT
Wallace B. Shute, 300 Island Park Dr., Ottawa, Ontario, Canada
Filed July 31, 1972, Ser. No. 276,313
Claims priority, application Canada, Aug. 25, 1971, 121340
Int. Cl. A61b *17/42*
U.S. Cl. 134—122 R **5 Claims**



The invention relates to a surgical instrument primarily for use during the sterilization of females. The instrument has a handle, a shank and a curved or hook-shaped primary portion. The primary portion is capable of insertion into the uterus where it engages the inner surface of the posterior uterine wall so that, when the instrument is rotated through an angle of approximately 180° the fundus of the uterus is pressed downward in acute retroversion into the cul-de-sac of the peritoneal cavity.

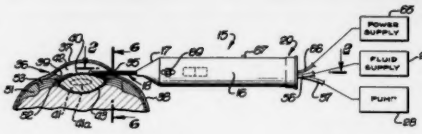
3,809,092
CONTACT LENS FOR VIEWING FLUORESCENT EYE TISSUE
Samuel V. Abraham, 16026 Royal Oak Rd., Encino, Calif.
Filed Apr. 13, 1972, Ser. No. 243,773
Int. Cl. A61b *17/32, 6/08*
U.S. Cl. 128—305 **8 Claims**



During eye surgery, particularly cataract removal, visibility of lens and capsule tissue in the eye is enhanced by placing on the cornea a contact lens having a color near the ultraviolet end of the visible spectrum. Light projected into the eye causes the lens and capsule material to fluoresce and become readily discernable to the surgeon through the colored contact lens.

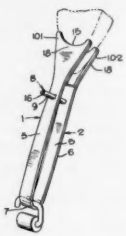
3,809,093
SURGICAL TOOL
Samuel V. Abraham, 16026 Royal Oak Rd., Encino, Calif.
Filed Apr. 14, 1972, Ser. No. 244,143
Int. Cl. A61b *17/32;* **A61f** *9/00*
U.S. Cl. 128—305 **18 Claims**

The probe of a hand held surgical tool includes a surgical tip at the end of a rod which swings through a limited arc in one plane only at a rate of less than about 100 cycles per second. One or more stationary tubes supply fluid to and/or suction fluid from the region of the tip. For eye surgery, the probe may use a globular tip about 1 millimeter in diameter having a small (0.1 mm) lateral or forward cutting projection and/or an



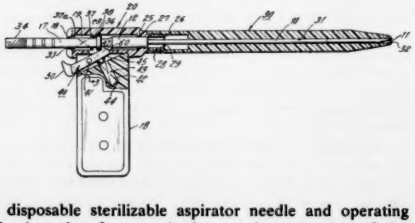
abrasive surface. The tool facilitates cataract removal through a small limbal opening, and is useful for other surgical procedures of the eye and other body areas.

3,809,094
TONGUE EXTENDER
Galen B. Cook, 3413 Norwich, Modesto, Calif.
Continuation-in-part of Ser. No. 887,886, Dec. 24, 1969, abandoned. This application May 22, 1972, Ser. No. 255,732
Int. Cl. A61b *17/28, 17/08*
U.S. Cl. 128—321 **9 Claims**



A device for extending and holding the tongue has two arms held in tongue-grasping position by a quick release mechanism. The arms each carry means for obtaining traction on the wet and slippery tongue without injury to the tongue. In the illustrative embodiments, such means comprise sponge-like materials with or without tacky substances on them, means for applying a vacuum to the tongue surface, or an arm surface designed to aid in frictional engagement of the tongue. The free end of each arm also may be shaped so as to avoid damage to the fraenum linguae membrane, which connects the tongue with the lower portion of the mouth.

3,809,095
ASPIRATOR NEEDLE INJECTOR
Hugo S. Cimber, Neufeldstrasse 134, 3012 Bern, Switzerland
Filed Oct. 15, 1969, Ser. No. 866,634
Int. Cl. A61b *17/34*
U.S. Cl. 128—347 **2 Claims**



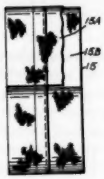
A disposable sterilizable aspirator needle and operating mechanism therefor constituting an improvement of the

device shown in Application Ser. No. 719,659, filed Apr. 8, 1968, now U.S. Pat. No. 3,580,255 in which a hollow disposable needle is supported in a hollow barrel for controlled spring loaded injection into the body for a predetermined distance. The barrel is secured to a pistol grip and the hollow needle is secured to a plunger in the pistol grip which is spring biased toward the injecting position and retained against movement under the spring bias by a latch mechanism which may be manually released. The needle is fully recessed in the barrel so that the barrel end may be placed against the body at the appropriate location and is extruded under the spring bias from the barrel end on release of the latch. The hollow needle may, as required, receive a catheter and a catheter stiffening wire.

3,809,096
PERINEAL PAD

Winnifred F. York, 128 Summit Park Ave., Portland, Maine

Continuation-in-part of Ser. No. 108,464, Jan. 21, 1971, abandoned. This application Jan. 18, 1973, Ser. No. 324,573
Int. Cl. A61f 7/04
U.S. Cl. 128—403 **7 Claims**

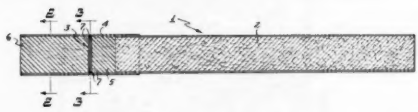


A sterile perineal pad is disclosed that is preferably of a disposable construction and has a thermal pack underlying that portion of its absorbent member that is to be in engagement with the urogenital region of the perineum. The absorbent member includes a thicker posterior portion and is preferably held concave in use with respect to its perineum engaging surface.

3,809,097
TOBACCO SMOKE FILTER

Benjamin Clayton, 1621 Bank of the Southwest Building, Houston, Tex., and Benjamin H. Thurman, Rt. 4, Culpeper, Va.

Filed July 27, 1971, Ser. No. 166,444
Int. Cl. A24d 1/04
U.S. Cl. 131—10.7 **1 Claim**



A filter for removing harmful ingredients from tobacco smoke without unduly increasing the draw including at least one section of a rod composed of longitudinally extending and generally parallel continuous cellulose acetate fibers and at least one very thin disc composed of randomly deposited wood cellulose fibers abutting a rod section, the rod section and disc being closely confined within an impervious shell. Preferably, a plurality of discs are sandwiched between two of the rod sections. The discs composed of wood cellulose fibers occupy only a very small fraction of the total length of the filter.

3,809,098
HAIR SETTING PROCESS

John Alfred Anderson, Wyoming, Ohio, assignor to The procter & Gamble Company, Cincinnati, Ohio

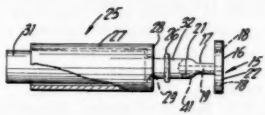
Filed Oct. 2, 1972, Ser. No. 294,052
Int. Cl. A45d 7/00
U.S. Cl. 132—7 **17 Claims**

A process for curling or straightening hair which has been previously oxidized comprising applying a solution of a polyvalent metal ion chelator thereto and subjecting the hair to a longitudinal stress.

3,809,099
ATTACHMENT TO HAIR

Eugene J. Goldberg, 34 Rockland Dr.; Marvin W. Kramer, 117 Scholarie Dr., both of Jericho, N.Y., and Joseph R. Licci, 215 Malloy St., Copiague, N.Y.

Continuation-in-part of Ser. No. 146,679, May 25, 1971, which is a continuation-in-part of Ser. No. 54,148, July 13, 1970, abandoned. This application Mar. 13, 1972, Ser. No. 234,249
Int. Cl. A41g 3/00
U.S. Cl. 132—53 **10 Claims**

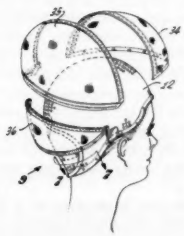


Apparatus and a method are provided for securing, for example, an article to a person's natural hair in a manner which permits the article to be periodically adjusted. This is accomplished by drawing or threading a person's hair through a fastener secured to the article so that the fastener can be moved about the threaded length of the person's hair toward and away from the scalp. Securing is accomplished by a selectively removeable retainer which holds the threaded hair against the fastener.

3,809,100
WIG

Salvatore J. Megna, 3721 Fair Oaks Blvd., Sacramento, Calif.

Filed Oct. 18, 1971, Ser. No. 189,908
Int. Cl. A41g 3/00
U.S. Cl. 132—53 **6 Claims**



A wig construction in which a cap to which the hair is attached is mounted on a foraminous form whose edges rest on the head of the wearer, but which is otherwise spaced from the head. The wig cap with its attached hair may be a single section that covers the entire form or may optionally be composed of a number of independently replaceable sections.

3,809,101
NAIL FILE
Takaetsu Shimizu, 24-12 4-chome Kami-Ikedai, Ota-ku, Tokyo, Japan
Filed Jan. 8, 1973, Ser. No. 321,556
Claims priority, application Japan, Nov. 11, 1972, 47-128877[U]
Int. Cl. A45d 29/04
U.S. Cl. 132—76.4 5 Claims

A novel nail file comprising an abrasive holding member and an abrasive paper characterized in that an elastic layer is interposed between said abrasive holding member and abrasive paper.

3,809,102
COMBINATION VANITY CASE
Andrew Ross, P.O. Box 2626 Station, Edmonton, Alberta, Canada
Filed Aug. 31, 1971, Ser. No. 176,557
Int. Cl. A45d 33/00
U.S. Cl. 132—82 R 5 Claims

This invention relates to new and useful improvements in toilet articles and in particular to a novel vanity case for the ladies. The combination vanity case possesses a number of utilities which may be conveniently carried and used and furnish all the usual requisites that may be required.

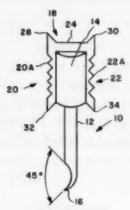
The vanity case has a cosmetic compartment and a separate lipstick compartment. The cosmetic compartment consists of a tapered plastic tray containing powder puff or pad, and alternatively eyeshadow-and rouge cakes, and has two coiled springs mounted to its bottom to provide the uplift force for opening the lid of the vanity case, when released by a rotary catch.

The lipstick is housed separately in a tubular container within the vanity case. The rotary catch in combination with camming grooves moves the lipstick simultaneously to a projected position at the side of the case and permit its complete withdrawal for use.

Thus not only is the cosmetic stick completely protected, but the holder in which it is housed is quite inconspicuous. The general shape and compactness of the vanity case allows the holder the use of the mirror which is mounted on the inside of the lid. When the case is closed, it presents the novel attractive appearance of a tapered book.

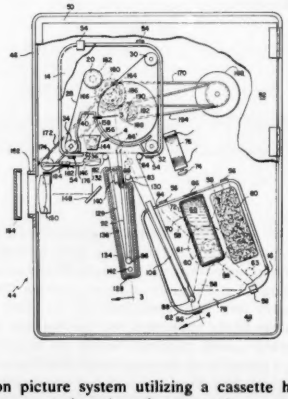
The vanity case shall be made of plastic materials and all parts are compactly arranged, so that the article will present a neat and attractive appearance and will occupy a minimum of space in a purse or handbag.

3,809,103
DISPOSABLE DENTAL IMPLEMENT
Harry Bender, 2 Overhill Rd., Elmsford, N.Y.
Filed Jan. 3, 1973, Ser. No. 320,699
Int. Cl. A61c 15/00
U.S. Cl. 132—93 6 Claims



A spongy, porous cleaning member mounted to a shaft, preferably at an angular relationship thereto, such porous, spongy member including a stiffened tapered outer rib portion extending about the perimeter of the spongy member, the outer rib including first and second deflected segments extending away from the spongy member with an opposite angular relationship, and exhibiting thereupon a number of points disposed at an obtuse to the spongy, porous, cleaning member, and placed at regulated intervals. In addition, the support shaft includes a tapered end portion at 45° angle to the support shaft opposite the spongy member and provided with an arcuate tapered portion, the tapered arcuate portion forming a flexible pliable cleaning and exercising implement.

3,809,104
MOTION PICTURE PROCESSING AND PROJECTION SYSTEM EMPLOYING MULTI-PURPOSE CASSETTE
Rogers B. Downey, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Division of Ser. No. 83,645, Oct. 23, 1970, which is a division of Ser. No. 761,771, Sept. 23, 1968, Pat. No. 3,597,062. This application Dec. 11, 1972, Ser. No. 313,838
Int. Cl. G03d 3/16
U.S. Cl. 95—89 R 12 Claims



A motion picture system utilizing a cassette having two releasably connected sections. In one section respective ends of a strip of film are permanently attached to reels for reversi-

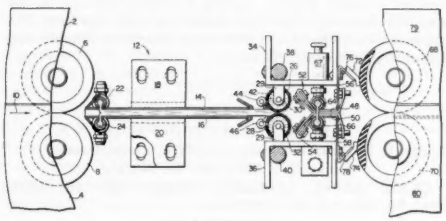
ble transport across a film gate, while the other section contains development fluid. Initially, when the two sections are connected together, the cassette is adapted to be positioned in a camera for exposure purposes. Subsequently, the two sections are separated and mounted independently in a unique projector in which the film is sequentially and simultaneously developed, by passing a loop thereof drawn from the film gate of the first section through the developing fluid contained in the second section, dried and projected through an appropriate optical system. Specially devised features are employed in the projector to release the development fluid from a sealed container into a reservoir section of the developing section of the cassette, to draw the loop of film from the film gate of the first section and insert the loop into the reservoir of development fluid, to dry the developed film and to subsequently retain the development fluid in a safe manner.

3,809,105

APPARATUS FOR PROCESSING TWO SIDES OF A PRINTING PLATE

Ellwood J. Horner, Armonk, N.Y., assignor to American Hoechst Corporation, Bridgewater, N.J.

Continuation of Ser. No. 215,533, Jan. 5, 1972, abandoned.
This application Apr. 10, 1973, Ser. No. 349,737
Int. Cl. G03d *3/08*
U.S. Cl. 134—122 R **11 Claims**



This invention relates to an apparatus for processing two sides of a printing plate comprising means for pre-soaking both sides of a printing plate with developer, opposed rotary brush means mounted adjacent said pre-soaking means and adapted to contact both sides of said plate, and opposed scrubber pad means mounted adjacent said brush means.

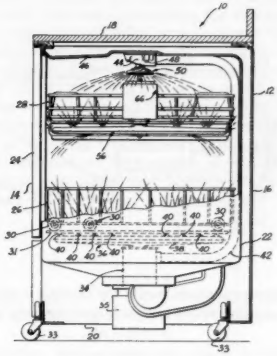
3,809,106

DISHWASHER WITH IMPROVED SPRAY APPARATUS

Clarence Crabtree, Herrin, Ill., assignor to Fedders Corporation, Edison, N.Y.

Filed Aug. 23, 1972, Ser. No. 283,060
Int. Cl. B08b *3/02*
U.S. Cl. 134—176 **3 Claims**

A dishwasher with an improved spray apparatus is provided. The dishwasher includes a washing tub having an upper and a lower dish rack supported therein. The spray system for the dishwasher includes a first spray member positioned below the lower rack for spraying liquid from a lower elevation to the lower rack, a second spray member positioned intermediate the upper and lower racks for spraying liquids from a higher



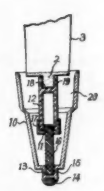
elevation to the lower rack and from a lower elevation to the upper rack; and a third spray member positioned for spraying liquid from a high elevation to the upper rack.

3,809,107

MULTIFUNCTIONAL UMBRELLA CAP

Hsing-Ching Liu, Taipei, China, assignor to Hsing-Ching Liu and Wen-Sieh Chen, both of Taipei, Taiwan, China

Filed Apr. 2, 1973, Ser. No. 346,931
Int. Cl. A45b *25/28*
U.S. Cl. 135—48 **5 Claims**



An umbrella cap comprising a cap body and a piston slidably mounted in a cylinder, said piston having a piston rod connected at one end to the inside bottom portion of said cap body and the cylinder is adapted for connection on the tip portion of an umbrella. When the umbrella is folded the cap body is moved upward and receives the umbrella ribs therein. Rainwater dripping from the umbrella is collected in the cap body.

3,809,108

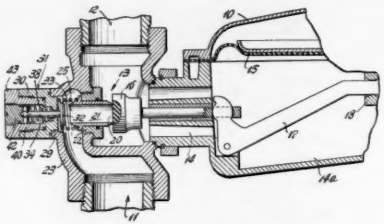
MONITOR AND AUTOMATIC SHUTOFF FOR GAS REGULATORS

George C. Hughes, Anderson, Ind., assignor to Textron Inc., Providence, R.I.

Filed Apr. 16, 1973, Ser. No. 351,804
Int. Cl. G05d *16/06*; **F16k** *31/14*
U.S. Cl. 137—73 **8 Claims**

There is disclosed a gas regulator having a resiliently positioned orifice sleeve adapted to yield in the event foreign matter becomes lodged between it and the diaphragm-operated regulator valve and to move to a position in which an auxiliary valve functions to regulate the flow of gas between the inlet and outlet of the regulator, the auxiliary valve being movably mounted and being moved in response to a deter-

minate pressure differential resulting from excessive gas flow through the regulator from any cause to shut off gas flow until the auxiliary valve member is manually reset; the auxiliary



valve means may include means for causing it to engage the orifice tube automatically in case it is excessively heated as by fire.

3,809,109

METHOD AND APPARATUS FOR MIXING GASES UNDER PRESSURE PARTICULARLY FOR RESPIRATORS AND MEDICAL DEVICES

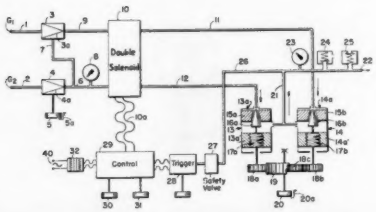
Hans Georg Breiling, Gross Gronau, and Detlef Warnow, Lubeck, both of Germany, assignors to Dragerwerk AG, Lubeck, Germany

Continuation of Ser. No. 42,672, June 2, 1970, abandoned. This application Mar. 14, 1972, Ser. No. 234,637

Claims priority, application Germany, June 25, 1969, 1932141

Int. Cl. A62b 7/02; G05d 11/03

U.S. Cl. 137—88 **2 Claims**



Gases under pressure are mixed by directing the gases through two separate conduits while the pressure in one of the conduits is regulated by a pressure regulator to a desired mixing pressure and the pressure in the other conduit is passed through a pressure valve which is operated in proportion to the regulated pressure in the first conduit. The gases are then directed through separate throttles in the respective conduits to a common mixing line while the valves of the throttles are regulated together in order to vary the mixing ratio and the flow area through each throttle while the combined flow area is maintained constant. The throttle valves include valve members which are movable in respect to the associated valve seat to provide a constant variation of the flow area for the gases and each valve is connected to a gear which is rotated by a central common gear which is affixed to a hand wheel adjustment. The regulation of the hand wheel effects a simultaneous proportionate opening and closing of each of the throttle valves. In addition the valves are constructed so that the changes which are produced by one produces a corresponding change of the other so that the overall output flow through the valves is constant.

3,809,110

DEVICE FOR PASSING COMPRESSED AIR AT PRESSURES VARYING IN DEPENDENCE UPON FORCES TRANSMITTED THROUGH THE DEVICE

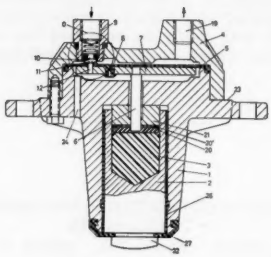
Lars Mattis Severinsson, Malmo, Sweden, assignor to Svenska Aktiebolaget Bromsregulator, Malmo, Sweden

Filed Nov. 28, 1972, Ser. No. 310,117

Claims priority, application Great Britain, Dec. 4, 1971, 56415/71

Int. Cl. B60t 8/22

U.S. Cl. 137—116.5 **12 Claims**



A force transmission device for mounting on a vehicle to determine the load has a movable differential piston having a member of smaller diameter including an intermediate deformable medium, connected with a movable member of larger diameter. A valve member connected to a pressure source regulates the pressure in a chamber bearing on the movable member of larger diameter as the position of this member changes thereby causing a greater pressure as the load increases and a lesser pressure as the load decreases. The pressure of this chamber is monitored to operate suitable load responsive devices such as brakes.

3,809,111

PRESSURE REDUCTION VALVE

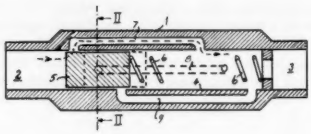
Anders E. I. Olsson, Frustunavagen 41 A, Alvsjo, Sweden

Filed July 7, 1971, Ser. No. 160,335

Claims priority, application Sweden, July 10, 1970, 9592/70; Mar. 23, 1971, 3727/71

Int. Cl. F16k 17/04

U.S. Cl. 137—503 **10 Claims**



A pressure reduction valve for moving medium adapted to be connected into a conduit between the source of the pressure medium and a valve controlled tapping place. Between an inlet and an outlet is a device for executing a variable resistance against movement substantially dependent upon the pressure drop in the valve. The valve contains a run in a valve housing, one end of which is in connection with the outlet. An axially displaceable piston is arranged in the run, so that the piston will be subjected on its one side to the action of the inlet pressure and on its other side to the influence of the outlet pressure. The piston is under spring bias against the action of the inlet pressure and thereby tends to assume a position in which the action of the inlet pressure is equal to the action of the sum of the outlet pressure and the spring force. The valve

contains a plurality of elongated relatively narrow by-pass-channels between the inlet and the outlet, which by-pass-channels are so shaped and arranged that they are opened or closed, respectively, dependent upon the position of the piston in the run, so that a progressively increasing number of by-pass-channels are opened and the effective resistance against movement of medium of the valve decreases when the piston is displaced in direction onto the outlet, and vice versa.

3,809,112
FLUID FLOW CONTROL APPARATUS

Mario Herbello, St. Louis, Mo., assignor to Factory Mutual Research Corporation, Norwood, Mass.

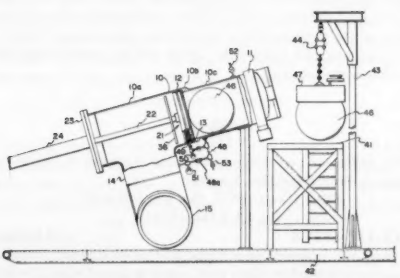
Filed May 30, 1973, Ser. No. 365,206
Int. Cl. F16k *21/04*; **A62c** *37/06, 37/22*
U.S. Cl. 137—236 **16 Claims**

An apparatus for controlling fluid flow through a conduit, including a housing having an inlet and an outlet adapted to register with the conduit. A valve member is disposed in the housing and is operatively connected to an actuator for moving the valve between an open position in which fluid flow is permitted through the housing and a closed position in which fluid flow through the housing is prevented. The valve is normally urged to the open position and the arrangement is such that a continuous manually applied energy input to the apparatus is required to move the valve to the closed position. A fire protection system incorporating the above apparatus.

3,809,113
SPHERE HANDLING APPARATUS AND METHOD

Marvin H. Grove, and Ronald G. Dunegan, both of Houston, Tex., assignors to M & J Company, Houston, Tex.

Filed Feb. 20, 1973, Ser. No. 334,043
Int. Cl. F17d *3/00*
U.S. Cl. 137—268 **6 Claims**

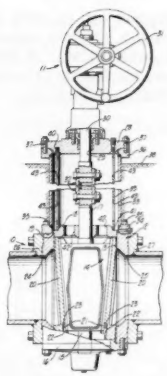


Sphere handling apparatus for use with pipe lines carrying fluid under pressure and serving to introduce or remove a sphere or other clean-out device. It makes use of an inclined hollow body connected to the line and adapted to contain a sphere. The interior of the body is divided into two spaces that are separated by a closure movable by power means between closed and open positions for enabling the two spaces to be sealed with respect to each other or to be placed in communication to enable a sphere to move from one space to the other. The closure is sealed with respect to a sleeve that forms a part of the body and is disposed intermediate the two spaces. Preferably bypass means is provided to enable an operator to connect the two spaces for pressure equalization. Also means is provided for detecting leakage past the closure. Preferably the sealing means between the closure and the sleeve is of the double resilient cup type. One embodiment is used for launching and another for retrieving spheres.

3,809,114
UNDERGROUND VALVE HAVING BELOW-SURFACE PARTS REMOVABLE FROM ABOVE-SURFACE POSITION

John W. Mueller, 1617 Chelsea Rd., Palos Verdes Estates, Calif., and William M. Pearson, 2712 Josie Ave., Long Beach, Calif.

Filed May 8, 1972, Ser. No. 250,869
Int. Cl. F16k *43/00*
U.S. Cl. 137—315 **3 Claims**



An underground valve having a subsurface valve body containing valving components operable from a ground level zone by actuating means including a connecting stem structure, the valve body having a tubular extension removably mounting a valve bonnet at the ground level zone, and upon removal releasing the valve components for withdrawal and replacement through the tubular extension along with the valve actuating stem structure.

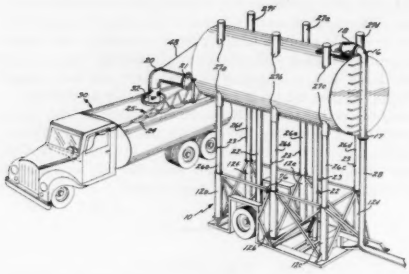
3,809,115
REMOTE CONTROL APPARATUS

Richard F. Klein, 20911 Via Verde, Covina, Calif.

Filed Mar. 13, 1972, Ser. No. 234,061
Int. Cl. B65j *1/06*
U.S. Cl. 137—344 **11 Claims**

The present invention relates to a remote control system, and more particularly relates to such a remote control system that is particularly adapted for the operation of filling a tanker truck from a water tank. The disclosed invention is such that

the truck operator can readily control the entire fill-up operation from his seat in the cab of the tanker. The disclosed system is adapted to service tankers of different sizes, different lengths, different heights, and different capacities without the need for a tank attendant.



3,809,116

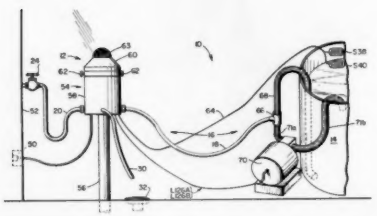
FLUID FLOW CONTROL SYSTEMS

George E. Sanner, Sparks, Md., assignor to Santron Corporation, Towson, Md.

Division of Ser. No. 272,793, July 18, 1972, Continuation-in-part of Ser. No. 18,829, Feb. 12, 1970, abandoned, which is a division of Ser. No. 456,787, May 18, 1965, Pat. No. 3,500,844. This application Jan. 10, 1973, Ser. No. 322,384

Int. Cl. G05d *9/12*

U.S. Cl. 137—391 **10 Claims**



A system for controlling the flow of fluid to and/or from a receptacle or reservoir which has a timed mode of operation and manual and demand modes, one or more level responsive controls, and at least one control for overriding the level responsive control or controls.

3,809,117

PRESSURE RESPONSIVE VALVE

Shiro Oota, 1-237, Aza Kukuchimae, Shimosakabe, Amagasakishi, Hyogoken, and Keitaro Yonezawa, 12-9-3, Kusugaokacho, Nadaku, Kobe, Hyogoken, both of Japan

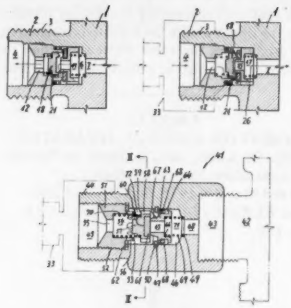
Filed Jan. 26, 1973, Ser. No. 326,961

Claims priority, application Japan, Jan. 31, 1972, 47/11536

Int. Cl. F16k *17/26*

U.S. Cl. 137—493.6 **12 Claims**

A valve which permits fluid to flow therethrough under normal pressure conditions but which closes in response to a reduction of fluid pressure in the system below a predetermined value. The valve operates to prevent the detrimental intrusion of foreign substances, such as air, dirt, vapor, oil, fumes, etc. into the system.



3,809,118

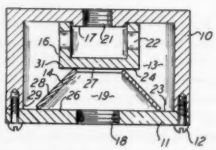
CONE DISK SPRING RELIEF VALVE

Ray S. Harding, Racine, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed July 19, 1973, Ser. No. 380,891

Int. Cl. F16k *15/14*

U.S. Cl. 137—525 **3 Claims**



A cone disk spring relief valve having two spaced-apart walls disposed within a housing containing a resilient cone-shaped member compressed between the walls. A fluid port is in flow communication with the hollow interior of the cone-shaped member, and fluid pressure on the interior of the member will cause the member to flex to allow the fluid to pass beyond the cone-shaped member and thereby the fluid is relieved. The housing walls are movable toward each other for compressing the cone-shaped member which has circular edges in fluid tight contact with the respective walls. Also, the housing has a fluid inlet port and a fluid outlet port which are aligned with each other for straight line flow of fluid through the valve, and the inlet port is in flow communication with the interior of the cone member, and the housing has connectors for moving one wall toward the other wall in compressing the cone-shaped member.

3,809,119

VALVES

Gordon Milford Cave, Solihull, England, assignor to Coplastix Limited, Worcestershire, England

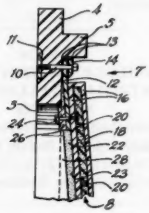
Filed May 1, 1972, Ser. No. 248,989

Int. Cl. F16k *15/03*

U.S. Cl. 137—527.8 **10 Claims**

A flap valve comprising a frame having an opening therein and a door adapted to close said opening out of which liquid may flow to a region containing another liquid the level of which may vary, said door being, in use, hinged above the opening with the opening arranged below the highest level

reached by liquid in said region, the door comprising a portion of a density selected to be less than that of the liquid in said region and a portion of a density selected to be higher than that



of the liquid in said region, the relative amounts of the low density portion and the high density portion being selected so that the overall density of the door is slightly greater than that of the liquid in said region.

3,809,120

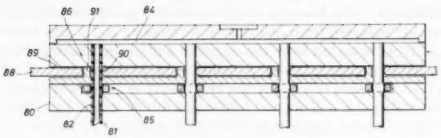
RAMDOM SEQUENCED PNEUMATIC MULTIPLEXING VALVE APPARATUS

Joseph L. Schweppe; Arthur H. McMorris, and Erick L. Ahlgren, all of Houston, Tex., assignors to Houston Engineering Research Corporation, Houston, Tex.

Filed Sept. 21, 1971, Ser. No. 182,478

Int. Cl. F16k *19/00*

U.S. Cl. 137—607 **22 Claims**



For multiplexing a number of pneumatic signals in random sequence, an apparatus which incorporates a plurality of gang operated valves arranged in a two dimensional pattern wherein the apparatus includes a body with two groups of valve operators extending therethrough, preferably at right angles. Each individual valve operator is preferably connected to several valves. However, the operation of two valve operators is required to open a single pressure source to the outlet so that the pressure to be scanned is identified by the coordinates of its location in the two dimensional pattern.

3,809,121

QUICK DISCONNECT PRESSURIZATION APPARATUS

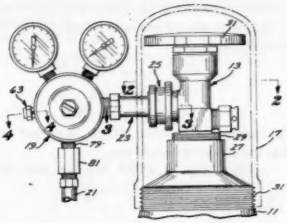
Harold Ronald Harris, 12741 Canter St., Garden Grove, Calif.

Filed May 1, 1972, Ser. No. 249,005The portion of the term of this patent subsequent to Mar. 6, 1990, has been disclaimed.

Int. Cl. F16l *29/00*; **F16k** *45/00*

U.S. Cl. 137—613 **3 Claims**

Quick disconnect pressurization apparatus including a control valve mounted on a pressure bottle and having an integral female socket projecting from the housing thereof. A regulator has a connector which is formed on its free end with a male plug for telescopical receipt in such socket and a quick disconnect coupling is provided for locking the plug in the socket thereby enabling the socket to be relatively short so a conventional protective cap may be conveniently installed over the control valve while providing for quick and convenient connection and disconnection of the socket and plug.



3,809,122

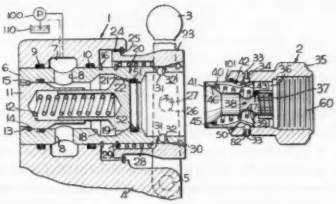
HYDRAULIC COUPLING

David A. Berg, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 2, 1972, Ser. No. 303,283

Int. Cl. F16l *37/22*

U.S. Cl. 137—614.06 **10 Claims**



A fluid coupling having a quick disconnecting means with automatic valving to simultaneously terminate and initiate fluid flow in the coupling.

3,809,123

ONE- AND SURPLUS-WAY MAGNETIC VALVE WITH PERMANENT MAGNET AND CONTROLS BY PULSES

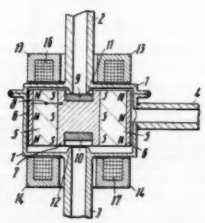
Georg Heimann, Wendelinusstr. 61, Stetternich, Germany

Filed Mar. 14, 1972, Ser. No. 233,052

Claims priority, application Germany, Mar. 16, 1971, 2112614; Feb. 22, 1972, 2208218

Int. Cl. F16k *11/00*

U.S. Cl. 137—625.5 **9 Claims**



A magnet-valve device comprising a housing constructed of a non-magnetic material, said housing having an outlet tube and a pair of opposed inlet tubes, said housing containing at

least one armature comprising a pair of terminals disposed on either side of a magnet, one of said terminals adapted to engage on opposed sides one of said inlets, said housing having disposed therearound at least one electricity-carrying coil whereby movement of the terminal adapted to engage the opposed inlets opens and closes said inlets in response to current passing through said coil.

3,809,124

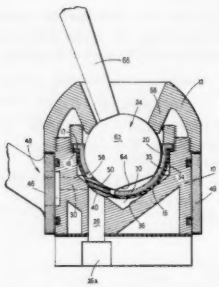
MIXING VALVE

Donald R. Nelson, Worcester, Mass., assignor to Goddard Industries, Inc., Worcester, Mass.

Filed May 14, 1973, Ser. No. 360,381

Int. Cl. F16k *11/02*

U.S. Cl. 137—625.41 **11 Claims**



The valve is of the type that includes a single operating handle for controlling both the proportioning between hot and cold water flow, and also the volume of flow. The valve includes a body having hot and cold inlet passages and an outlet duct, a ball-shaped control member, a rigid stationary plastic liner into which the control member fits, and a resilient diaphragm that is stationary but deflectable and is disposed intermediate the liner and valve seat cavity of the body. The liner has a pair of apertures for accommodating a corresponding pair of nipples which are displaceable toward and away from the inlet passages for controlling the flow of fluid therefrom.

3,809,125

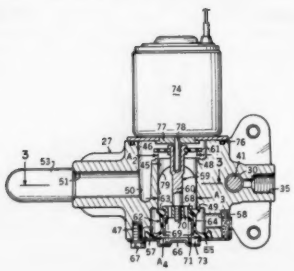
ANTI-SKID MECHANISM

John A. Machek, Creve Coeur, Mo., assignor to Wagner Electric Corporation, Newark, N.J.

Division of Ser. No. 199,431, Nov. 17, 1971. This application Dec. 13, 1972, Ser. No. 314,813

Int. Cl. F15b *13/44*; F16k *11/00*

U.S. Cl. 137—625.65 **8 Claims**



An anti-lock device for a vehicle brake system is provided with a solenoid operated control valve including a first valve member and a second diaphragm valve member actuated in response to signals from a sensing mechanism to subject a control member to vacuum and selectively subject said control member to atmosphere for controlling the application of supplied fluid pressure to a vehicle brake, and throttling valve means is provided to control the subjection of said control member to the vacuum.

3,809,126

COMBINED EMERGENCY STOP AND GOVERNOR VALVE FOR CONTROLLING FLUID FLOW TO A TURBO-MACHINE

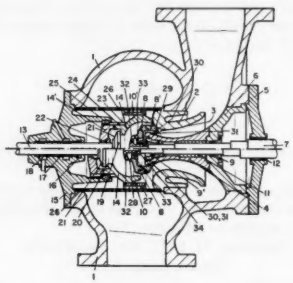
Arthur Oberle, Ennetbaden, Switzerland, assignor to Brown Boveri & Company Limited, Baden, Switzerland

Filed Sept. 13, 1972, Ser. No. 288,547

Claims priority, application Switzerland, Sept. 24, 1971, 13888/71

Int. Cl. F16k *1/00*

U.S. Cl. 137—630.14 **4 Claims**



A combined emergency stop and governor valve structure includes a valve housing which encloses a governor valve assembly actuated from one end of the housing and a stop valve assembly actuated from the opposite end of the housing. The governor valve includes a bell-shaped portion the end of which defines a valve seat, the emergency stop valve is operable within the bell-shaped portion of the governor valve and both valves are rigidly supported in all operation positions.

3,809,127

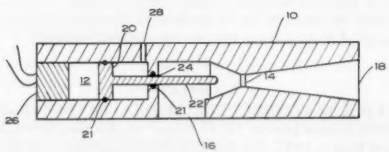
TWO POSITION LIQUID FLOW CONTROL VALVE

Lee N. Gilbert, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 3, 1971, Ser. No. 204,657

Int. Cl. F15d *1/02*; F16d *31/00*

U.S. Cl. 138—44 **5 Claims**



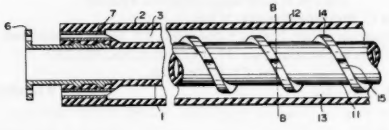
A two position liquid flow control valve comprising a piston connected to a pintle. Movement of the piston causes the pintle to move into or out of the throat of a cavitating venturi thereby altering the throat area and thus the liquid flow rate through the venturi.

3,809,128

FLOATING AND SUBMERGING CONTROLLABLE HOSE

Tamotu Tateisi; Shigeo Ueda, and Masayoshi Kuwabara, all of Yokohama, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Continuation of Ser. No. 887,921, Oct. 24, 1969, abandoned.
This application June 3, 1971, Ser. No. 149,622
Int. Cl. F16l *11/12*
U.S. Cl. 138—114 5 Claims



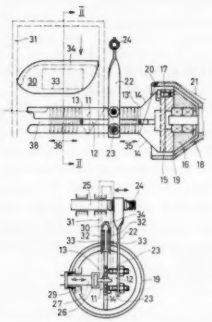
A submersible hose section having an inner hose and an outer hose, for transportation of liquid material, e.g., crude oil. The hose includes a resistive core structure secured to the outer surface of the inner hose for preventing the outer hose from coming into blocking contact with the inner hose when the space between the inner and outer hoses is evacuated for causing the hose section to submerge in sea water or other liquid medium.

3,809,129

DEVICE FOR TRANSFERRING A PORTION OF WEFT THREAD TO A WEFT INSERTING MEANS

Walter Muller, Jona/St. Gall, Switzerland, assignor to Ruti Machinery Works Ltd., Ruti/Zurich, Switzerland

Filed Aug. 10, 1972, Ser. No. 279,291
Claims priority, application Switzerland, Aug. 13, 1971, 11941/71
Int. Cl. D03d *47/26*
U.S. Cl. 139—12 3 Claims



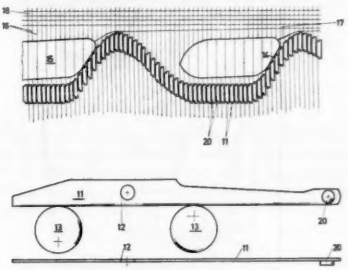
A device for transferring a portion of weft thread to a weft thread inserting means in a traveling wave loom, the device having a thread coiling member formed with a slot and along which a portion of the thread is adapted to be displaced, as a coil, with the aid of a pusher means extending through the slot, the weft thread inserting means having two flat, juxtaposed lateral walls with the coil of thread being transferred to the inserting means by pushing the inserting means over the coiling member, transfersely of the longitudinal direction thereof, and then pulling-away the inserting means in the longitudinal direction of the coiling member, over one end thereof.

3,809,130

ARRANGEMENT FOR DRIVING WEFT INSERTION MEANS

Edgar Strauss, Ruti, and Charles Karcher, Kusnacht, both of Switzerland, assignors to Ruti Machinery Works Ltd., Ruti/Zurich, Switzerland

Filed Aug. 23, 1972, Ser. No. 283,058
Claims priority, application Switzerland, Sept. 3, 1971, 12931/71
Int. Cl. D03d *47/26*
U.S. Cl. 139—12 12 Claims



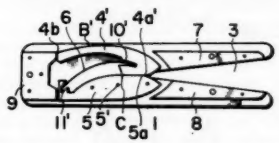
An arrangement for driving weft insertion means on a wave type loom having a multiplicity of lamellae for driving the insertion means, the lamellae arranged in a row, juxtaposed at their wide sides and, in operation, adapted to pivot, whereby one follows after the other so that, in their entirety, they perform a "wave"-like movement, with the pivoting lamellae impinging in the zone of one of their ends obliquely against an edge of the insertion means so as to displace the latter.

3,809,131

YARN CARRIER FOR A WEAVING MACHINE

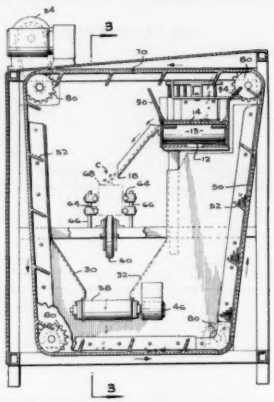
Hiroshiro Kimura, Uji; Heiji Arimoto, Kyoto; Hirohisa Nara, Uji; Tsugio Miyamatsu, Uji, and Mitsuo Kitajima, Uji, all of Japan, assignors to Unitaka Ltd., Amagasaki-shi, Japan

Division of Ser. No. 49,476, June 24, 1970, Pat. No. 3,695,306.
This application Aug. 3, 1972, Ser. No. 277,549
Int. Cl. D03j *5/06*
U.S. Cl. 139—125 2 Claims



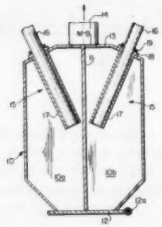
A yarn carrier for a weaving machine which has two arms including a yarn gripping portion which grips the yarn by means of contact between the two arms which are resiliently biased toward each other at the front of the yarn carrier in the flying direction. The yarn carrier also has a mechanism for releasing the depression of the two arms of the yarn gripping portion by a force applied from outside against the resiliency so as to freely pass the yarn through a gap made between the arms. Also, the yarn carrier has a guide groove formed in such a manner that width gradually decreases from the front to the rear of the feeding direction of the yarn carrier so as to feed the yarn to the yarn gripping portion and that the yarn gripping portion is formed in parallel with the flying direction of the yarn at the end portion at the inlet portion of the yarn to the yarn gripping portion of the yarn carrier.

3,809,132
FOOD PACKING MACHINE
Lewis H. Jones, Anchorage, Ky., assignor to Food Packers Equipment Company, Inc., Louisville, Ky.
Filed June 23, 1972, Ser. No. 265,711
Int. Cl. B65b *1/06*
U.S. Cl. 141—122 14 Claims



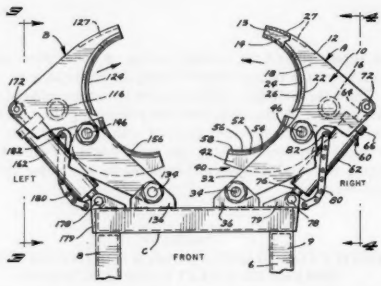
A food packing machine is disclosed including an infeed food conveyor from which a plurality of deflector plates deflect food particles onto a food slide to provide a cascade of particles onto a row of empty containers moving through the cascade with excess food particles falling onto an overflow return conveyor which returns the excess food to a lifting conveyor in the form of a cleated belt member oriented in a rectangular configuration and having inwardly extending flat cleats for engaging and lifting the returned food upwardly to deposit the returned food onto the infeed conveyor for return to the filling area.

3,809,133
HOPPER WITH VARIABLE LEVEL HOPPER FEED TUBE
David I. Skinner, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.
Filed July 20, 1973, Ser. No. 381,008
Int. Cl. B65b *1/30*
U.S. Cl. 141—198 16 Claims



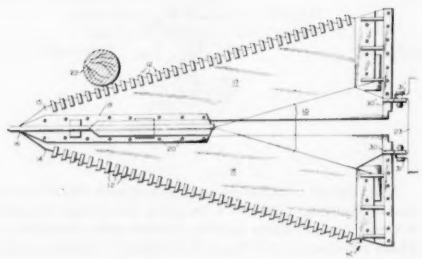
A feed tube extends downwardly into a hopper, preferably a vacuum hopper wherein vacuum pressure is created within the hopper to draw material through the feed tube thereinto, and it is preferably a split hopper having at least two sections filled with separate material at a predetermined ratio. The lower end of the feed tube includes an arrangement such as openings in the tube itself and a relatively rotatable surrounding sleeve for varying the upper limit of lateral through openings through the side of the feed tube. When the material in the hopper reaches the said upper limit and hence covers the through openings, the vacuum will no longer be communicated to the interior of the feed tube and hence the flow of material therethrough will terminate. Consequently, the relative positions of the inner tube and the surrounding sleeve determine the amount of material delivered to the section of the hopper associated with that feed tube.

3,809,134
DEVICE FOR DELIMBING TREES
Thomas C. McCabe, Duluth, Minn.
Continuation of Ser. No. 213,466, Dec. 29, 1971, abandoned.
This application July 27, 1973, Ser. No. 383,267
Int. Cl. B27c *9/00*
U.S. Cl. 144—2 Z 9 Claims



A delimber head for removing the limbs from felled trees by drawing the trees through the head in which primary left and right axially facing cutting units are pivoted to a base and urged toward one another by hydraulic force producing means and secondary left and right axially facing cutting units are pivoted to the first named cutting units and moved into cutting position by restraining means acting between and said base and said secondary cutting units.

3,809,135
EARTH WORKING BLADE WITH SAW TEETH
Ralph E. Dove, Rte. No. 4, Sedalia, Mo.
Filed July 27, 1972, Ser. No. 275,524
Int. Cl. A01g *23/08*; B27b *11/12*, *33/02*
U.S. Cl. 144—34 F 1 Claim

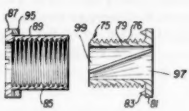


An earth working machine blade assembly of triangular shape and saw-toothed at the outer edge for mounting parallel and close to the ground apex forward to clear brush and trees in front of a bulldozer.

3,809,136
THREE-WAY SCREW DRIVER
Roger J. A. Cournoyer, 17200 Libby, Maple Heights, Ohio
Filed May 3, 1973, Ser. No. 356,897
Int. Cl. B25h *15/00*
U.S. Cl. 145—50 R 4 Claims

A screw driver device consisting primarily of a shank portion with a handle, having a multi-edged blade with a notch and shoulder on each edge of the blade for positioning a tool to apply pressure to a screw.

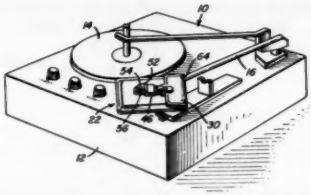
3,809,137
PENCIL SHARPENING DEVICE
James J. Dombroski, 40 Belknap Ave., Newport, N.H.
Filed Sept. 17, 1971, Ser. No. 181,388
Int. Cl. B43l *23/08*
U.S. Cl. 145—3.61 2 Claims



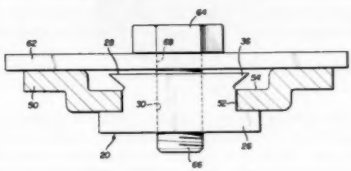
A pencil sharpener is described including a fastening-pin assembly comprising a bore-defining fastening pin, having a pencil-sharpening blade therein. The fastening pin's bore is funnel shaped for receiving pencil points to be sharpened. In one embodiment the fastening-pin assembly comprises a tubularly shaped rivet with a pencil sharpening blade assembly mounted therein. The rivet pencil sharpener is described in combination with a folding ruler wherein several rivet assemblies are located at pivotal joints of the folding ruler. When the folding ruler is folded so as to line up the pivotal joints, the rivet assemblies cooperate to form a pencil sharpener. The rivet pencil sharpener is also described in combination with a tape ruler wherein it is mounted at the axis about which a roll of tape rotates. In another embodiment, the fastening pin assembly comprises a tubularly shaped bolt, having a pencil sharpening blade mounted therein and being fastened to objects with a nut.

3,809,138
PHONOGRAPH TONE ARM JACKET
Donald S. Workman, 3745 S.W. 59th Ave., Davie, Fla.
Filed June 30, 1972, Ser. No. 268,119
Int. Cl. B65d *55/02, 85/20*
U.S. Cl. 150—52 R 2 Claims

An envelope having an opening extending along one marginal edge portion and provided with a closure flap foldable over the open edge portion of the envelope. The free edge portion of the flap and the side of the envelope over which the flap is foldable include coacting structure for releasably securing the flap in a closed position. The flap of the envelope is defined by an extension of one side panel of the envelope and the extension defines a base end portion secured to the corresponding side panel of the envelope and a free end portion, a fold zone for the flap being spaced outwardly of and generally paralleling the open side of the envelope and the extension, in one side edge portion thereof including a laterally opening notch through the center of which the fold zone extends, the notch defining a passage extending into the envelope when the flap is disposed in the closed position to accomodate an elongated member having one enlarged end within the envelope and its other end projecting outwardly of the envelope, the flap preventing withdrawal of the enlarged head from within the envelope.



3,809,139
CLINCH-SLIDE NUT, PANEL ASSEMBLY AND METHOD OF FORMING SAME
William E. Strain, Birmingham, Mich., assignor to Kean Manufacturing Corporation, Dearborn Heights, Mich.
Filed May 26, 1972, Ser. No. 257,109
Int. Cl. F16b *37/04*
U.S. Cl. 151—41.72 7 Claims

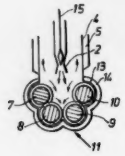


A nut and panel assembly, wherein the nut is loosely retained in an elongated panel opening for sliding adjustment therein. The nut includes a central pilot which is disposed through the panel opening, a pair of opposed flanges which overlie one face of the panel and a pair of ears which extend upwardly from the top face of the pilot, prior to securement, and are deformed outwardly and downwardly to overlie the opposed flanges and the panel to loosely retain the nut in the panel opening. A pair of grooves are provided in the side walls of the pilot, beneath the ears, to accommodate the flow of metal during deformation of the ears and limit lateral displacement of the side walls which would lock the nut in the panel opening.

3,809,140
CONCENTRATION OF MATERIALS
Rudolf Erdmenger, Bergisch Gladbach; Martin Ullrich, Opladen, and Manfred Hederich, Leverkusen-Schlebusch, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Dec. 23, 1970, Ser. No. 101,090
Claims priority, application Germany, Dec. 24, 1969, 1964946; Dec. 24, 1969, 1964949
Int. Cl. B01d *1/28, 1/00*
U.S. Cl. 159—2 E 10 Claims

In the concentration of materials, e.g., a solution of polymers, by discharging the material from an expansion noz-

zle into an evaporating chamber, the degree of the concentration is increased so that the concentrated material is no longer fluid. Such operation is made feasible by disposing screw conveying means in the discharge of the evaporating chamber for



withdrawal of the material. Efficiency of the concentration is increased. The material can be further concentrated in evaporating chambers through which the conveying means carry the material.

3,809,141

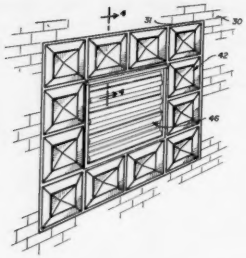
VENTILATOR AND SIMULATED STRUCTURE PANEL

Jack C. Loerop, 5129 Lawn Ave., Western Springs, Ill.

Filed Jan. 26, 1972, Ser. No. 220,783

Int. Cl. E06b *3/32*

U.S. Cl. 160—89 **14 Claims**



A ventilator formed from molded parts and a simulated structural panel formed from molded parts, said ventilator and panel used in combination or separately. The panel has four molded frame parts with integrally formed structures to support a screen, a window pane, a louver assembly, and a roller for opening and closing the louver assembly. The frame parts have integrally formed interlocking members for joining and bonding the frame parts together. The louver assembly includes a plurality of louver members with integrally formed brackets which are pivoted to the side frame parts and to common links, one of which common link is operated by the roller to open and close the louver members. Molded split stem pivot shafts are used for the roller and louver assembly. Other integrally formed parts on the molded frame part are provided to tilt the window pane in open position, to provide rigidity, and interlocking of the frame parts, to provide interior and exterior flanges for the ventilator, and to provide other features of advantage in the substantially all plastic ventilator.

3,809,142

MULTIPLE HEIGHT SPACE DIVIDER SYSTEM AND CONNECTOR ASSEMBLY THEREFOR

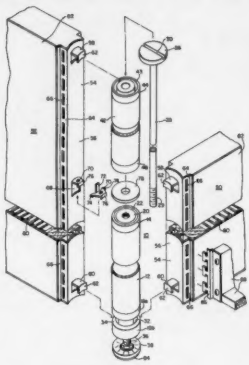
Raymond A. Bleeker, Grand Rapids, Mich., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 23, 1971, Ser. No. 211,584

Int. Cl. A47g *5/00*

U.S. Cl. 160—135 **11 Claims**

A streamlined, modern, space dividing system for use in environmental office design applications and the like which includes one or more hollow tubular vertical post of two or more differing heights having two or more panel connector adapters axially aligned therewith. Each panel connector adapter includes a vertically oriented annular slot therein adapted to



receive complementary hook connectors associated with the vertical edges of at least two spaced dividing panels of differing heights, thereby providing support for panels of differing heights in any angular orientation about the axis of the post.

3,809,143

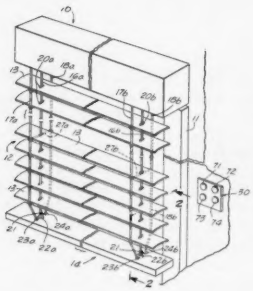
AUTOMATIC CONTROL FOR VENETIAN BLIND

Ayhan Ipekgil, 301 S. Kenmore Ave., Los Angeles, Calif.

Filed June 29, 1972, Ser. No. 267,566

Int. Cl. E06b *9/30*

U.S. Cl. 160—168 **5 Claims**

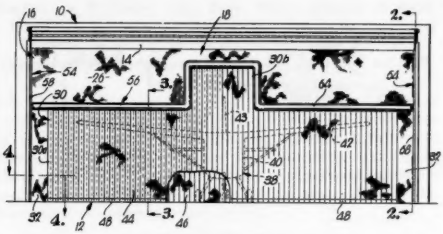


Apparatus for automatically controlling a venetian blind is provided within a cornice box from which the blind is suspended. The apparatus includes a first and second drive motor for driving shafts provided with reels. Thus, in order to raise the blind a pair of cords, one on each side of the blind, is taken up by reels on a drive shaft being rotated by a first motor; and in order to lower the blind the pair of cords are played out from the reels by reversing the rotation of the first motor. The slats for the blind are supported by transverse cord members connected across a front and back cord provided on each side of the blind. Thus, in order to close the blind the front cord on each side of the blind is taken up by reels on a drive shaft being rotated by the second motor and the back cord on each side of the blind is simultaneously played out of reels on a drive shaft being rotated by the second motor; and in order to open the blind the direction of movements of the front and back cords is reversed by reversing the rotation of the second motor. Push buttons on a conveniently positioned panel provide for controlling the operation of the blind by selectively actuating the first and second motors.

3,809,144
WEATHER CURTAIN FOR AIRPLANE HANGAR ENTRANCE

James F. Garufo, 2716 George Washington Blvd., Wichita, Kans.

Filed Nov. 20, 1972, Ser. No. 307,984
Int. Cl. A47h *23/05*
U.S. Cl. 160—184 6 Claims

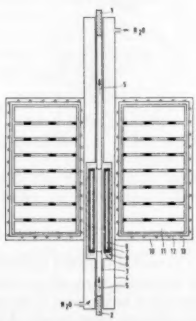


A pass-through curtain suspended across the entrance of a large enclosure such as an airplane hangar or other building has an inner and outer series of transparent, back-to-back, depending closure flaps which are arranged in overlapping relationship with one another to prevent the escape of temperate air from the hangar or the inflow of ambient air when the hangar door is open, yet allow the forced entry of an airplane by deflecting and parting of the flaps. A substantially air-impervious barrier portion of the curtain above the pass-through, flap portion and along each end thereof precludes air flow through areas of the curtain other than the flap portion to thereby further reduce the total volume of air passed by the curtain. A transverse, air-inflated, stiffening tube extending across the curtain slightly above the flaps and an individual, vertically extending stiffening tube on each flap rigidify the curtain and flaps so that the flaps quickly return to their undeflected positions instead of clinging to the wings and tail structure of the airplane as it moves through the curtain. Zippered pockets of granular weight material along the bottom of the flaps provide variable ballast.

3,809,145
PROCESS FOR THE PRODUCTION OF PERMANENT MAGNETS

Wilhelm Kuhlmann-Schafer, Hannover, Germany, assignor to Preussag Aktiengesellschaft, Hannover, Germany

Filed June 15, 1972, Ser. No. 264,399
Claims priority, application Germany, June 15, 1971, 2129592
Int. Cl. B22d *27/02*
U.S. Cl. 164—49 9 Claims

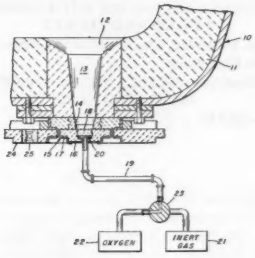


Permanent magnets having high coercivity forces and remanence are produced by melting and cooling a charge of magnetic material in a strong magnetic field.

3,809,146
METHOD OF OPENING AN INTERMEDIATE VESSEL NOZZLE FOR CONTINUOUS CASTING

Sigmund L. Andrzajak, Chicago, Ill.; Michael A. Orehoski, Duquesne; James T. Shapland, Wilkins Township, Allegheny County, both of Pa., and Raymond S. Szumilas, Chicago, Ill., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Feb. 18, 1972, Ser. No. 227,476
Int. Cl. B22d *11/10*
U.S. Cl. 164—66 4 Claims

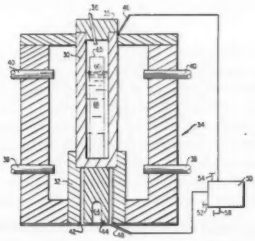


A method of and apparatus for handling liquid steel in a tundish preparatory to teeming the steel into a continuous casting mold. Initially the tundish outlet is closed with a slidable gate which has a porous plug aligned with the outlet. Inert gas is injected into the steel through this plug to agitate the steel in the region of the tundish outlet. Inert gas injection is terminated shortly before the commencement of teeming, and oxygen rich gas is injected to react exothermically with the steel in the nozzle well area. Thereafter the porous plug slidable gate is replaced with a conventional gate having a teeming opening.

3,809,147
METHOD FOR MAKING PRODUCTS SUITABLE FOR USE IN FORMING COMPOSITE SUPERCONDUCTORS

Jan Wayne Raymond, 250 S. Oneida, Apt. 401B, and Clay N. Whetstone, 840 S. Oneida, Apt. 403A, both of Denver, Colo.

Division of Ser. No. 47,390, June 18, 1970. This application Sept. 24, 1971, Ser. No. 183,594
Int. Cl. B22d *27/04*
U.S. Cl. 164—122 6 Claims



A plurality of rods are assembled in a predetermined configuration to form a core which is surrounded by a molten matrix metal within a heated crucible. The temperature of the thusly charged crucible's upper portion is maintained above the matrix metal's melting point. In this respect, as the heat is applied to the top of the melt, the crucible is maintained in a hot environment while the bottom of the crucible is centrally chilled. In this manner the charge is solidified from the bottom toward the top so that the solidification progresses upwardly

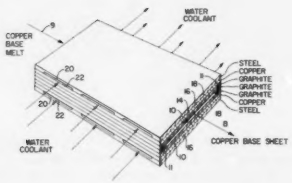
and outwardly in a conical pattern. After the controlled solidification is completed the casting is separated from the crucible to form a cored extrusion billet. In one embodiment the rods are separated from the casting and the resulting open holes are filled with superconductive material to form a composite superconductor extrusion billet. In another embodiment the rods themselves are made of a superconductive material so as to eliminate the step of separating the rods from the casting.

3,809,148

CONTINUOUS CASTING DIE WITH COMPATIBLE LINING AND JACKET

Verne Pulsifer, Pittsburg, Pa., assignor to Copper Range Company, White Pine, Mich.

Filed Nov. 30, 1972, Ser. No. 310,688
Int. Cl. B22d *11/00*
U.S. Cl. 164—283 M **9 Claims**



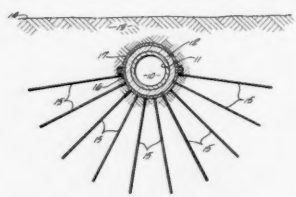
A continuous casting die, particularly for copper base melts, has a graphite lining and a copper jacket, which are connected by molybdenum fasteners. The thermal expansion coefficients and the other physical characteristices are such that threaded joints between the fasteners and the jacket do not loosen in service and bearing pressure between the lining and the jacket is maintained.

3,809,149

METHOD OF SUPPORTING A HOT OIL PIPELINE THROUGH PERMAFROST

Daniel H. Deutsch, 141 Kenworthy Dr., Pasadena, Calif.

Filed Oct. 4, 1972, Ser. No. 294,790
Int. Cl. F28f *7/00*
U.S. Cl. 165—1 **11 Claims**



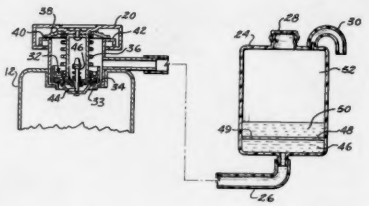
An underground hot oil pipeline is maintained in a stable location by maintaining the permafrost in a frozen condition. This frozen condition is maintained by a combination of insulation means to reduce heat loss from the pipeline into the permafrost to below about 1 calory per square centimeter per day and by the provision of a plurality of elongated thermally conductive strips extending outwardly from the exterior of the pipeline insulating means in order to conduct that heat which flows from the immediate region of the pipeline insulating means into the surrounding permafrost. Above ground heat radiating means may be advantageously utilized to help conduct heat into the surrounding atmosphere.

3,809,150

MINIMIZING CORROSION OF OVERFLOW RECEPTACLE EQUIPPED ENGINE COOLING SYSTEM

Allie B. Holmes, Corpus Christi, Tex., assignor to Opti-Cap, Inc., Corpus Christi, Tex.

Filed Apr. 16, 1973, Ser. No. 351,371
Int. Cl. F28f *19/00*; F01p *3/00*
U.S. Cl. 165—1 **11 Claims**



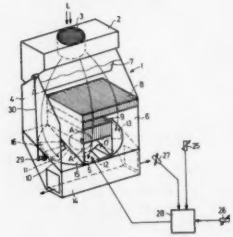
A method and system for minimizing corrosion in a vehicle engine cooling system containing a water base coolant and having an overflow receptacle vented to atmosphere and connected to the cooling system to receive overflow coolant from the system and to return the coolant to the system. The method and system includes maintaining a liquid seal on the surface of the coolant in the overflow receptacle. The liquid seal completely covers the surface of the coolant in the overflow receptacle and includes a coolant insoluble air excluding component and a coolant soluble corrosion inhibiting component. The air excluding component prevents absorption of fresh air by the coolant in the overflow receptacle and the corrosion inhibiting component gradually dissolves in the coolant over long periods of time to prevent cooling system corrosion.

3,809,151

AIR HEATING AND COOLING SYSTEM FOR A VEHICLE PASSENGER COMPARTMENT

Wolfgang Scheidel, Buhlertal, and Helmut Steinmann, Baden-Baden, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 7, 1973, Ser. No. 338,745
Claims priority, application Germany, Mar. 8, 1972, 2211091
Int. Cl. B60h *3/00*
U.S. Cl. 165—42 **16 Claims**



The output of a blower is supplied to three branch ducts in one of which the air passes through a cooler, in another of which it passes through a heater and in the third of which the air always passes through unchanged. A common control valve controls the discharge from the three ducts, never allowing discharge from more than two of them and providing smooth transition as the valve is moved from one extreme

position to the other, from 100 percent heated air to 100 percent unchanged air to 100 percent cooled air. For reasons of heat exchanger design, the air passing through the duct in which the heater is located is branched off downstream of the cooling device from the duct in which the cooler is located.

3,809,152

AUTOMOTIVE COOLING SYSTEMS

Matthew A. Boehmer, Allen Park, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 782,468, Dec. 9, 1968, abandoned. This application July 22, 1971, Ser. No. 165,329

Int. Cl. C09n *3/02*

U.S. Cl. 165—51 **3 Claims**

An automotive heat exchange type cooling system includes an automotive radiator coupled with a reservoir exteriorly disposed thereof and vented to the atmosphere and a two-phase aqueous coolant, one phase being capable of forming a supernatant layer on the surface of the other when in the reservoir to retard evaporation thereof.

3,809,153

SYSTEM FOR USE WITH STORAGE TANKS FOR RECEIVING, DELIVERING OR RETAINING LIQUIFIED GAS

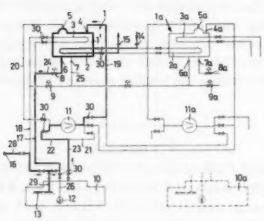
Drago Kober, Rondorf/Cologne, Germany, assignor to Liquid Gas Anlagen Union GmbH, Remagen-Rolandseck, Germany

Filed Oct. 1, 1971, Ser. No. 185,617

Claims priority, application Germany, Oct. 1, 1970, 2048271

Int. Cl. F25b *13/00*

U.S. Cl. 165—62 **9 Claims**



A system for filling and draining a storage tank with liquified gas and/or for cooling and heating stored liquified gas includes a heat exchanger having a chamber with two nests of tubes, one for circulating cooling or heating medium and the other for circulating liquified gas. The other nest of tubes is connected by conduit means to a storage tank while the chamber itself is connected by further conduit means both with the first conduit means and also through a compressor and pump with the storage tank.

3,809,154

HEAT EXCHANGER FOR TRANSFERRING HEAT BETWEEN GASES

Laszlo Heller; Laszlo Szucs, and Zoltan Szabo, all of Budapest, Hungary, assignors to Energiagazdalkodasi Intezet, Budapest, Hungary

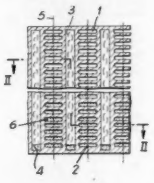
Filed Sept. 16, 1971, Ser. No. 181,125

Claims priority, application Hungary, Aug. 21, 1970, OE-572

Int. Cl. F28d *15/00*

U.S. Cl. 165—105 **5 Claims**

A heat exchanger for taking heat from a hot gas and delivering the heat to a cool gas. The heat exchanger includes a lower passage structure through which the hot gas flows and an upper passage structure through which the cool gas, which is to be heated, flows. A heat-transfer structure is operatively connected with the upper and lower passage structure so as to be in heat-exchanging relation therewith, this heat-transfer structure including an elongated vertical enclosure which is in heat-transfer communication with the gas in the lower passage structure as well as with the gas in the upper passage structure. This heat-transfer structure includes within the latter enclosure a fluid which is in a liquid phase in a lower portion of the enclosure which is operatively connected with the lower



passage structure and in a vapor phase in an upper portion of the enclosure which is operatively connected with the upper passage structure. Thus, heat from the hot gas in the lower passage structure serves to vaporize the liquid phase of the fluid in the enclosure with the vapor rising up to the elevation of the upper passage structure where the vapor gives up its heat to the gas in the upper passage structure with consequent condensing of the vapor to form again the liquid phase which settles to the lower portion of the enclosure.

3,809,155

EROSION-CORROSION RESISTANT ALUMINUM RADIATOR CLAD TUBING

William H. Anthony, and James M. Popplewell, both of Guilford, Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Feb. 2, 1972, Ser. No. 222,795

Int. Cl. F28f *13/18*

U.S. Cl. 165—133 **6 Claims**

A composite aluminum article having increased resistance to erosion corrosion in aqueous environments comprising an aluminum base alloy cladding consisting essentially of 0.8 to 1.3 percent zinc, 0.7 percent maximum silicon plus iron, 0.10 percent maximum copper, 0.10 percent maximum manganese, 0.10 percent maximum magnesium, balance essentially aluminum, bonded to at least one side of an aluminum base alloy core consisting essentially of manganese from 1.0 to 1.5 percent, chromium from 0.1 to 0.4 percent, copper from 0.05 to 0.4 percent, balance essentially aluminum.

3,809,156

HEAT EXCHANGING PLATE WITH PRESSED RIDGES

Jarl Anders Andersson, Lund, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Oct. 6, 1972, Ser. No. 295,428

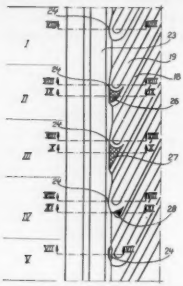
Claims priority, application Sweden, Oct. 8, 1971, 12730/71

Int. Cl. F28f *3/08*

U.S. Cl. 165—167 **2 Claims**

One side of the heat exchanging plate has a marginal pressed groove for receiving the usual gasket, and both sides

have pressed ridges extending side-by-side for crossing and contacting similar ridges on adjacent plates in a plate heat exchanger. The ridges on the same side of the plate as the marginal groove extend all the way to this groove, so that their end



surfaces form parts of a side wall of the groove; and the ridges on the opposite side of the plate merge into plate portions between the latter ridges and the groove, these plate portions being situated between the two planes extending through the crests of the ridges on the two sides, respectively, of the plate.

3,809,157

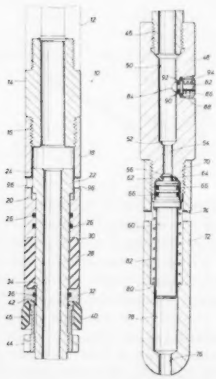
TUBING PLUG

Alex Dufrene, P.O. Box 194, Des Allemands, La.

Filed Nov. 21, 1972, Ser. No. 308,327

Int. Cl. E21b *33/128*

U.S. Cl. 166—185 **9 Claims**



A plug suitable for use in a tubing string which incorporates an elongate body formed of a slidable inner mandrel which moves a spacer ring mounted on the exterior, the spacer ring expanding a resilient pack-off element adjacent a fixed external mandrel. The apparatus is set by upward flow in the tubing string wherein upward flow forces the inner mandrel upward. A check valve arrangement is attached to the lower end of the inner mandrel. A lateral relief valve is included so that a release tool can reduce the pressure differential acting across the plug.

3,809,158

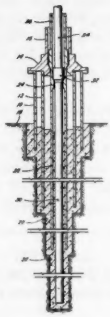
WELL COMPLETION APPARATUS AND METHOD

James Vaull Bonds, and John Walton McCaskill, both of Houston, Tex., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed July 27, 1972, Ser. No. 275,576

Int. Cl. E21b *33/035, 23/06*

U.S. Cl. 166—250 **24 Claims**



Well completion apparatus in which a casing hanger is suspended from a first member of a well tool and a sealing member is suspended from a second member of the well tool. The first and second members are releasably connected whereby upon landing the casing hanger within the well the first member is disconnected from the second member and the sealing member is lowered into sealing position independently of the casing hanger. A portion of the sealing member is rotated to cause an expansion ring to engage an annular groove in the casing head thereby actuating the sealing member and locking the sealing member and casing hanger in position.

3,809,159

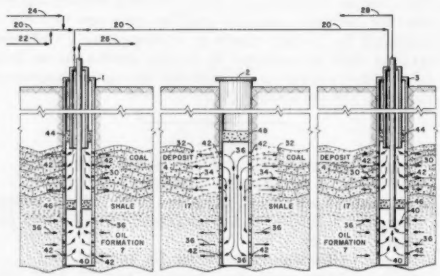
PROCESS FOR SIMULTANEOUSLY INCREASING RECOVERY AND UPGRADING OIL IN A RESERVOIR

Gary C. Young, and Howard H. Ferrell, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Oct. 2, 1972, Ser. No. 293,968

Int. Cl. E21b *43/14, 43/24*

U.S. Cl. 166—258 **4 Claims**



A process for simultaneously increasing recovery and upgrading oil in a reservoir by injecting gas produced by the in situ gasification of coal to increase recovery and upgrade said oil. The gas is also useful in the production of steam and other gaseous materials for injection.

3,809,160

IMPROVED METHOD FOR SELECTIVELY CONTROLLING FLOW OF AQUEOUS FLUIDS IN SUBTERRANEAN FORMATIONS

Willis G. Routson, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 44,609, June 8, 1970, Pat. No. 3,687,200. This application Aug. 3, 1972, Ser. No. 277,765

Int. Cl. E21b *33/138*

U.S. Cl. 166—294 **5 Claims**

A method for selectively reducing the flow of water in permeable subterranean formations by injecting into said formations a solution of a polyvalent metal ion followed by a solution or dispersion of an organic polymeric polyelectrolyte, thereby forming a stable colloidal dispersion of a water-insoluble inorganic solid in said water-containing formation in preference to its formation in oil-containing strata. This, then, results in improved oil recovery.

3,809,161

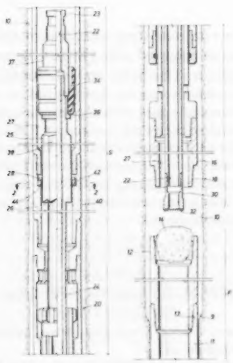
POSITIVE ROTATION CLEANOUT APPARATUS AND METHOD

William F. Carothers, Houston, Tex., assignor to Wilson Industries, Inc., Houston, Tex.

Filed Oct. 13, 1971, Ser. No. 188,876

Int. Cl. E21b *31/00, 41/00*

U.S. Cl. 166—301 **18 Claims**



Apparatus for retrieving drill pipe, drilling tools, or other equipment stuck in a well bore has a selectively insertable, positively rotating drill bit which can clean out the box end of a collar or tool to enable a fishing string to engage the stuck object, and can clean out the bore of a well pipe to enable lowering therethrough of an explosive charge as an aid to retrieving the stuck object. A method for retrieving drill pipe, drilling tools, or other equipment stuck in a well bore is also provided.

3,809,162

OVERSIZE SUBSURFACE TUBING PUMP INSTALLATION AND METHOD OF RETRIEVING THE PUMP

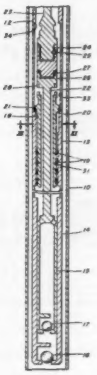
Matthew Sydor, Edmonton, Alberta, Canada, assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Oct. 24, 1972, Ser. No. 300,090

Int. Cl. E21b *33/00*

U.S. Cl. 166—315 **8 Claims**

An oversize subsurface tubing pump installation and method of retrieving the pump from a well. Both the pump barrel and plunger are too large to pass through the tubing. When the pump is to be retrieved, the sucker rods are raised and lift the seating assembly to expose a drain hole in the seating nipple. Fluid drains from the tubing through the exposed drain hole. Continued raising of the sucker rods breaks the connection between the sucker rods and pump plunger. The sucker rods and then the tubing and pump are pulled from the well. Draining the tubing prevents spillage at the top of the well.



3,809,163

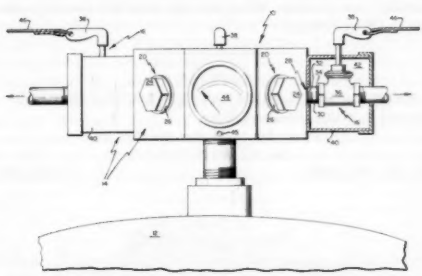
MULTIPLE VALVE DISTRIBUTOR HEAD

George Weise, 1462 Alps Rd., Wayne, N.J.

Filed Mar. 7, 1973, Ser. No. 338,835

Int. Cl. A62c *37/12*

U.S. Cl. 169—9 **3 Claims**



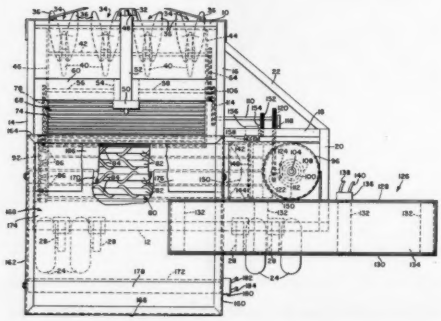
This invention relates to fire extinguishing systems and specifically pertains to a multiple valve distributor head for pressure actuated cartridges containing a fire extinguishing agent which protect a plurality of fire hazard areas through fixed pipe systems attached to the valves of the distributor head. The multiple valve distributor head permits the selective discharge of the entire contents of the cartridge through one valve into the fixed pipe fire system protecting one hazard area upon detection of a fire in that area, without unseating or opening valves leading to the fixed pipe systems of unaffected hazard areas. The multiple valve distributor head comprises a fitting for pressurized cartridges of fire extinguishing agent formed with a plurality of opposed laterally-extending bosses having openings communicating with an interior distribution cam chamber and counterboard and internally threaded at their outer ends to receive independently actuated valves which in turn are connected to fixed pipe fire systems through which the fire extinguishing agent is discharged.

3,809,164

STORAGE TANK AND RECLEANING APPARATUS FOR ROOT CROP HARVESTERS

Richard Wayne Hook, Des Moines, and William Wayne Jackson, Bettendorf, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed May 21, 1973, Ser. No. 361,934
Int. Cl. A01d *19/02*
U.S. Cl. 171—58 10 Claims



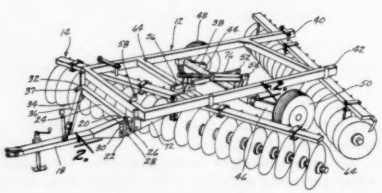
A root crop harvester having a horizontal cleaning conveyor for conveying harvested roots to one side of the machine while simultaneously removing excess dirt therefrom, and a vertical conveyor for receiving roots from the horizontal conveyor, elevating them and discharging them either into a receptacle alongside the harvester or into a storage tank mounted on the harvester frame. The storage tank has a transversely extending opening in its forward portion disposed directly above the cleaning conveyor, and a floor conveyor selectively operable to move roots lying on the floor forwardly to the opening so that they can gravitate there-through onto the cleaning conveyor to be recleaned.

3,809,165

HYDRAULICALLY OPERATED WEIGHT CONTROL

Maurice E. Miller, Stratton, Nebr.

Filed Feb. 26, 1973, Ser. No. 335,444
Int. Cl. A01b *59/04*
U.S. Cl. 172—328 6 Claims



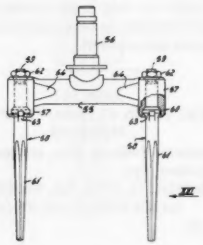
A hydraulically operated weight control apparatus for a disc or the like is disclosed comprising means for shifting the weight between front and rear disc sections. The disc comprises a frame means having front and rear disc sections secured thereto. A transversely extending axle is secured to the frame means and has ground engaging wheels at the opposite ends thereof which control the discing depth and transport height. A hydraulic cylinder is secured to the axle to raise and lower the wheels with respect to the frame means. A forwardly extending hitch is pivotally secured about a horizontal axis to the forward end of the frame means. A hydraulic cylinder is connected to the axle and the hitch means to pivot the hitch means with respect to the frame means to permit the selective shifting of weight between the front and rear disc sections.

3,809,166

TINE MOUNTINGS

Cornelis van der Lely, 7 Bruschemain, Zug, Switzerland, and Ary van der Lely, 10 Weverskade, Maasland, Netherlands

Filed Jan. 18, 1972, Ser. No. 218,667
Claims priority, application Netherlands, Jan. 19, 1971, 7100672; Mar. 1, 1971, 7102669; Aug. 31, 1971, 7111947
Int. Cl. A01b *15/00*
U.S. Cl. 172—763 7 Claims



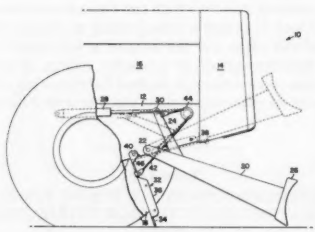
A cultivator tine mounting includes an elongated support that rotates about a central axis with tine holder holes at each end of the support. The holes are surrounded by upper and lower surfaces which can be configured to seat the upper fastening portions of a tine with securing means, retaining the tine in fixed relationship with the support. A stiffener element or deformation of the support can be located near the holes for additional support. The support can be hollow and made of two sheet metal interengaging parts. Also the tine holders can be vertically extending members that are attached to the remainder of the support.

3,809,167

DEVICE FOR POSITIONING A PIVOTAL VEHICLE BOTTOM GUARD

Lawrence James Glider, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Dec. 14, 1972, Ser. No. 315,148
Int. Cl. E02f *3/76*; B62d *25/20*
U.S. Cl. 172—808 3 Claims



A skidder-type vehicle includes a blade assembly vertically pivotally mounted on the main frame of the skidder at its forward end and a pair of hydraulic cylinders are mounted between the skidder main frame and the blade assembly for swinging the latter vertically. The skidder includes a bottom guard which is vertically pivotally mounted to the underside of the main frame at the forward end thereof and a cable is con-

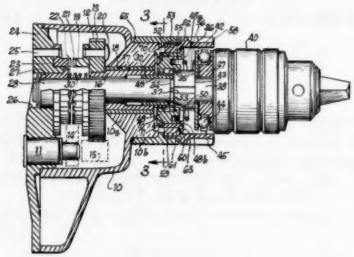
nectible between the blade assembly and the bottom guard to act as a motion-transfer means for causing the bottom guard to be raised and lowered concurrently with the raising and lowering of the blade assembly when screw fasteners normally holding the bottom guard in its installed position are removed.

3,809,168

HAMMER DRILL

Walter James Fromm, Chicago, Ill., assignor to Skil Corporation, Chicago, Ill.

Filed Apr. 23, 1973, Ser. No. 353,562
Int. Cl. E21c *1/12*
U.S. Cl. 173—13 **6 Claims**



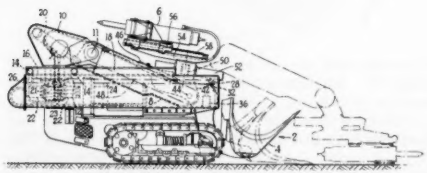
A driven shaft carries a ring gear having an annular formation of teeth adapted for ratcheting engagement with an annular series of fixed teeth. When the shaft is moved inwardly of the tool housing as the result of contact of the drill bit with the work, these teeth are brought into engagement to provide a hammering action. A spindle has one end thereof rotatably mounted in a bore formed in the shaft and has the other end thereof supporting a drill chuck. A coupler sleeve is axially slidable for being located in three predetermined positions; this coupler sleeve transfers rotation from the shaft to the spindle in two of its three axial positions thereby defining a drilling mode and a combined hammering and drilling mode. In the third axial position of the coupler sleeve, the same abuts a thrust formation and prevents engagement of the ratcheting teeth thereby to define a hammering mode of operation. The sleeve is axially positioned by manually operated cam means.

3,809,169

LOADING MACHINE IMPACT TOOL SUPPORTED BY ADJUSTABLE BOOM AND CARRIAGE

William Allen Hunt, Tynemouth, England, assignor to Elmco (Great Britain) Limited, Earlsway, Team Valley Gateshead Nell OSB, England

Filed Feb. 2, 1973, Ser. No. 329,074
Claims priority, application Great Britain, Feb. 16, 1972, 7188/72
Int. Cl. E21c *11/02*
U.S. Cl. 173—28 **17 Claims**



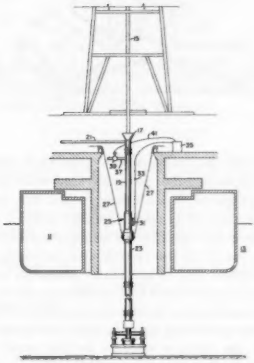
An earth-working vehicle having a first earth-working implement located at its forward end and a stowable second boom supported earth-working implement located along one side of the vehicle. The boom is mounted on a track traversing carriage for pivotal adjustment relative to the carriage about substantially vertical and horizontal axes and the implement is mounted on the free end of the boom for movement about two axes contained in two mutually perpendicular planes.

3,809,170

METHOD AND APPARATUS FOR DETECTING FLUID INFLUX IN OFFSHORE DRILLING OPERATIONS

William T. Ilfrey, and James R. Sheffield, both of Houston, Tex., assignors to Esso Production Research Company, Houston, Tex.

Filed Mar. 13, 1972, Ser. No. 234,226
Int. Cl. E21b *15/02*
U.S. Cl. 175—7 **9 Claims**



An improved method and apparatus for use in connection with offshore drilling is disclosed. The system is particularly useful in operations where a drilling vessel is situated at the surface of a body of water and circulation of drilling fluid is accomplished by introducing drilling fluid into a drill string extending from the vessel into a borehole in the floor of the body of water and returning it through a separate conduit. The present invention includes method and apparatus for terminating circulation of the drilling fluid and then monitoring the fluid level of the drill fluid within the return conduit to detect any influx of formation fluid into the borehole.

3,809,171

WEIGHING SCALE

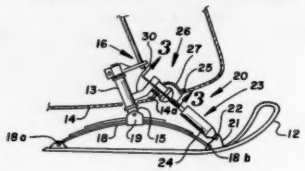
William Y. Hutchinson, Chicago, and Walter P. Kushmuk, Niles, both of Ill., assignors to Continental Scale Corporation, Chicago, Ill.

Division of Ser. No. 254,767, May 18, 1971. This application Mar. 21, 1973, Ser. No. 343,548
Int. Cl. G01g *23/14, 21/28, 1/36*
U.S. Cl. 177—165 **4 Claims**

A weighing scale is provided having a number of features including a folding column or pillar, a new type of weighing

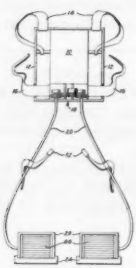
mechanism, a new type of beam scale, and a new type of knob assembly for weight indicating means for a beam scale, all arranged in a compact form which is completely portable and adapted for packing, shipping and storage.

3,809,172
SHOCK ABSORBER MOUNTING FOR SNOWMOBILES
G. Vernon Hendrickson, 309 Main Ave. So., Rouseau, Minn., and Kermit A. Hendrickson, Rt. 2, Lake Park, Minn.
Filed Aug. 17, 1972, Ser. No. 281,448
Int. Cl. B62b *13/12*; **B62m** *27/02*
U.S. Cl. 180—5 R **3 Claims**



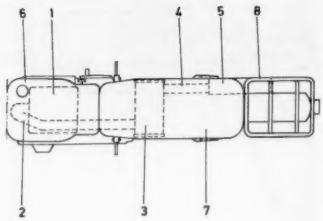
A structure for mounting shock absorbers onto snowmobiles or other vehicles that are provided with front steering and riding ski structures including means for mounting one end of the shock absorber to the spindle housing of the snowmobile with the other end thereof being provided in absorbing relationship to the ski of the vehicle and providing a means for mounting the upper end of the shock absorber in a universal captured arrangement which will permit the shock absorber to react in its normal fashion for any ski position and further such mounting means providing an adjustable universal arrangemement wherein the tension applied to the upper end of the shock absorber will tend to return the skis to a forward or frontwardly directed alignment.

3,809,173
SKI PROPELLING DEVICE
Duncan T. McLeod, 610 W. Second Ave., Anchorage, Alaska
Filed Aug. 21, 1972, Ser. No. 282,064
Int. Cl. B62m *27/02*
U.S. Cl. 180—5 R **10 Claims**



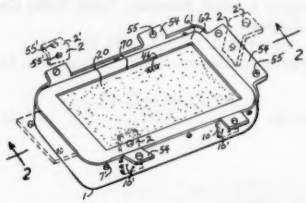
A device that is selectively projectable below a ski bottom to propel a ski across snow covered ground. The device includes a pair of pulleys mounted to the ski for heightwise movement between upper and lower positions and an endless belt extending about and between the pulleys. The belt has a bottom run that is located above the ski bottom when the pulleys are in the upper positions and projects through a slot in the ski below the ski bottom when the pulleys are in the lowered positions. An engine, mounted to the skier's back, is connected to one of the pulleys by a flexible cable. A propelling mechanism operates in response to the turning on of the engine and the rotation of the flexible cable to cause the pulleys to move downwardly so as to project the bottom run below the bottom of the ski and to rotate the pulleys in such a direction as to move the bottom run rearwardly to thereby propel the ski forwardly.

3,809,174
MOTORCYCLE WITH PROTECTED EXHAUST PIPE SYSTEM
Gosta Hjalmar Fredrik Lovgren, and Ove Vilmer Lundell, both of Varberg, Sweden, assignors to Monark-Crescent AB, Varberg, Sweden
Filed Aug. 21, 1972, Ser. No. 282,110
Claims priority, application Sweden, Feb. 24, 1972, 2273/72
Int. Cl. B60k *13/04*
U.S. Cl. 180—64 A **2 Claims**



An exhaust pipe system including exhaust pipes and mufflers is placed entirely within the horizontal extent of the rest of the motorcycle.

3,809,175
HEALTH, SURFACE, WATER AND/OR MATERIAL PROTECTIVE DEVICE
Peter Andrews, 190 Gebhardt Rd., Penfield, N.Y.
The portion of the term of this patent subsequent to July 6, 1988 has been disclaimed.
Continuation-in-part of Ser. No. 94,793, Dec. 3, 1970, abandoned, which is a continuation-in-part of Ser. Nos. 532,831, Feb. 21, 1966, Pat. No. 3,669,204, and Ser. No. 750,094, Aug. 3, 1968, Pat. No. 3,590,937, which is a continuation-in-part of Ser. No. 508,625, Oct. 21, 1965, Pat. No. 3,396,810, which is a division of Ser. No. 288,159, June 17, 1963, abandoned. This application Dec. 14, 1972, Ser. No. 315,174
Int. Cl. B62d *25/20*
U.S. Cl. 180—69.1 **32 Claims**



A process and an entirely upstanding walled receptacle member of a subcombination apparatus which is removably secured to at least one portion of a motor vehicle of the race car, automobile or car, truck, bus, boat or monorail type, and accordingly having oil or fluid drippings retained therein. The process invention is substantially performed in a material and/or a receptacle portion of the subcombination apparatus. The receptacle, in one of its embodiments, having at least one separate material for at least retaining one portion of the oil or fluid which drips therein. The process being substantially for increasing the rate of oxidation and thickening and evapora-

tion of the oil or fluid which is captured in at least one portion of at least one receptacle and/or at least one material retained therein. The oil or fluid leaks or drips from and/or into the motor vehicles having a defective oil or fluid gasket, seal and the like, the latter generally pertaining to a sliding and/or rotating shaft member thereof. The process invention substantially prevents the captured or dripped in fluid from being spilled, ejected or dumped substantially out of the receptacle and onto, for example, a roadway's, race track's, highway's (car, truck and/or bus) travelling surface. Thereby "summer icing" of the disclosed traveled surfaces and "viscous hydroplaning" of the motor vehicle's tires thereon and especially when the motor vehicle's are abruptly started, stopped, curving or curving in and out and/or travelling at a very high rate of speed.

3,809,176

TRACTOR-SHOVEL WITH PIVOTAL STEERING MEANS

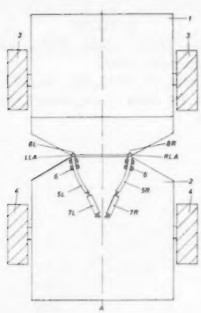
Georg Von Braunschweig, Krahenwinkel, Germany, assignor to Firma Rheinstahl Aktiengesellschaft Hanomag Baumaschinen, Hannover, Germany

Filed Sept. 7, 1972, Ser. No. 287,013

Claims priority, application Germany, Sept. 8, 1971, 2144909

Int. Cl. B62d *5/00*

U.S. Cl. 180—79.2 B **8 Claims**



A tractor-shovel comprises two carriages, one for a shovel and one for a motor, connected by two pivotal joints located at either side of the longitudinal axis of the vehicle. The joints are pivoted about vertical axes, and steering of the tractor-shovel is effected by laterally displacing one of the joints along the drive direction while holding the other joint fixed.

3,809,177

VEHICLE DRIVE AXLE WHEEL ASSEMBLY

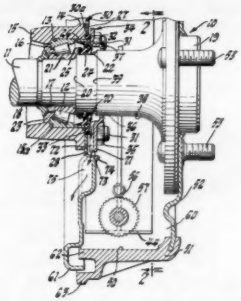
John F. Pirochta, Jr., Okemos, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 29, 1973, Ser. No. 327,589

Int. Cl. B60b *35/00*

U.S. Cl. 180—88 **2 Claims**

A vehicle drive axle wheel assembly having a brake backing plate and a retainer plate fixed to an axle tube of the vehicle, the brake backing plate having an opening and a channel aligned with a corresponding channel in the retainer plate to direct the flow of any lubricant leaking past the axle bearing seal of the assembly away from the side of the backing plate on which the brake components are mounted.



3,809,178

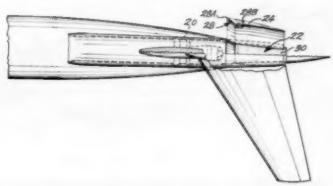
CLAMSHELL EXHAUST NOZZLE AND SOUND DEFLECTOR

Michael E. Manca, Bellevue, and Robert H. Drinnon, Kent, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Apr. 30, 1973, Ser. No. 356,021

Int. Cl. F01n *1/00*

U.S. Cl. 181—33 HC **19 Claims**



A sound suppression apparatus for a jet engine mounted in a nacelle wherein the exhaust nozzle duct comprises a variable ramp as the lower surface thereof and a pair of clamshell doors as the enclosure thereof. The clamshell doors are pivotally mounted about a longitudinal hinge on each side of the engine nacelle and when they are in the closed position, the interior surface of the duct, formed by the closed clamshell doors, conforms to the predetermined shape of the high speed cruise nozzle and externally, the shape of the doors conform to the configuration of the streamlined nacelle. When the clamshell doors are opened outwardly from the top, they form an upward opening exhaust nozzle with a pair of clamshell deflecting surfaces extending laterally outwardly and upwardly about the exhaust nozzle flow for the sound suppression mode of airplane operation during low speed flight of takeoff and landing.

3,809,179

EXHAUST MUFFLER FOR PNEUMATIC TOOLS

Glenn Allen Delaney, Jr., and Robert Wayne Jones, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

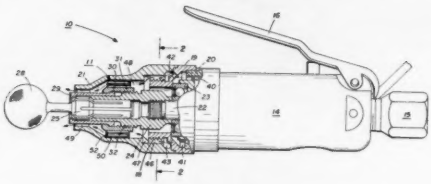
Filed Apr. 18, 1973, Ser. No. 352,169

Int. Cl. F01n *3/06*

U.S. Cl. 181—36 A **9 Claims**

A muffler for the air exhaust of pneumatic tools to reduce the noise level thereof. Composition of the muffler comprises

an abrasive grit distributed on a thin flexible base to which it is secured. An example of the composition is represented by commercially available grades of common emery cloth. Positioning the muffler in a manner affording retention of its flexibility enables sound muffling within an otherwise restrictive



exhaust passage with only minimal, if any, adverse effect on operational characteristics of the tool. With this construction it is possible to muffle the exhaust of tools previously regarded as impossible or impractical to muffle satisfactorily because of space limitations ordinarily insufficient to accommodate a muffler device.

3,809,180

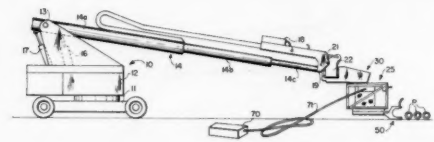
AERIAL PLATFORM APPARATUS HAVING PIPE GRABS

John L. Grove, McConnellsburg, Pa., assignor to Fulton Industries, Inc., McConnellsburg, Pa.

Filed May 25, 1973, Ser. No. 364,195

Int. Cl. B66f *11/04*

U.S. Cl. 182—2 **15 Claims**



An aerial platform apparatus includes a wheeled chassis, an extensible boom mounted on the chassis for luffing and swinging movement, and a workman's platform carried by the boom. The platform is equipped at its forward vertical face with pipe grabs, for engaging and holding a length of pipe, and each pipe grab may be separately elevated relative to the platform by jacks. The platform may be rotated on a normally vertical axis at the end of the boom through 180°, so as to be along either side of the boom, and the platform may be inclined relative to horizontal by actuating a levelling cylinder at the boom end to incline the normally vertical axis to provide inclination of the basket when rotated to lie beside the boom, or to place the pipe grabs at ground level.

3,809,181

RETRACTABLE LADDERS

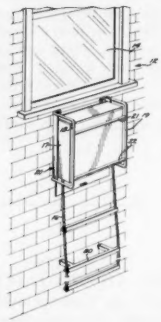
Steve Staranick, 2062 Mori Ln., Orange, Calif., and Jerome R. Garrison, 7931 Orangewood, Stanton, Calif.

Filed Dec. 26, 1972, Ser. No. 318,121

Int. Cl. E06c *9/14*

U.S. Cl. 182—70 **3 Claims**

A retractable ladder is disclosed which includes a flexible ladder having rungs spanning a pair of flexible lines, the upper ends of which are fastened to the interior of a generally rectangular box container whose lower wall swings open to release the ladder and permit it to fall so that it can be extended to full length. The upper wall of the box can be opened whereby the ladder can be returned to storage in the box by pulling it up through the box. The container is mounted on a frame which serves as a means by which the unit may be mounted at the side of a building, generally below a window. The unit includes a fixed ladder to facilitate crawling over the container and down to the flexible ladder which extends below



it. The container is provided with a special latch operable from above which secures the lower wall of the container in place and so that the ladder will be contained until it is needed.

3,809,182

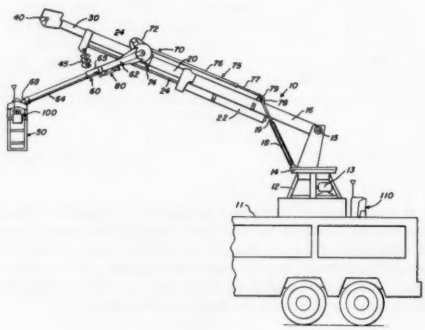
REMOTE CONTROL CIRCUITS FOR HYDRAULIC MOTORS

Wendell E. Wilson, Bloomington, Minn., assignor to Tel-E-Lect, Inc., Minneapolis, Minn.

Filed Oct. 16, 1972, Ser. No. 297,785

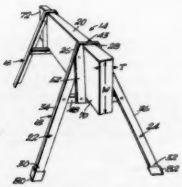
Int. Cl. B66f *11/04*; B66c *23/62*

U.S. Cl. 182—148 **12 Claims**



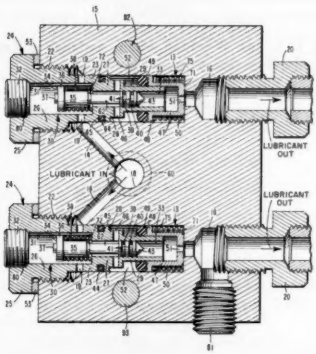
A simplified remote control system for a plurality of hydraulic motors in which the transmitter and receiver controllers are simplified by providing for only a single proportional control member at each location with on-off type controls for all of the motors and in which the hydraulic circuit incorporates a proportional valve in series with a plurality of on-off valves or bidirectional valves in direct control of the motors and in parallel circuit to proportionally control flow from a hydraulic source to all of the bidirectional controllers or valves simultaneously. This will permit speed and directional control with speed of operation being effected for all motors operated simultaneously and at the same rate.

3,809,183
PLATFORM SUPPORT
George L. Lowd, and Robert T. Lowd, both of P.O. Box 650-395, Miami, Fla.
Filed Aug. 9, 1973, Ser. No. 386,967
Int. Cl. F16m 11/00
U.S. Cl. 182—186 7 Claims



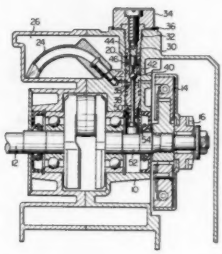
A support for a horse to support planks defining a platform comprising a generally A-shaped member wherein the cross bar of the A-shaped member defines orienting means for the support and socket means are provided to receive the end zones of a board spanning a pair of supports according to this invention to define a horse.

3,809,184
METERING VALVE AND LUBRICATING SYSTEM PROVIDED THEREWITH
Roy B. Smith, Washington Court House; Alex T. Sabo, Cuyahoga Falls, and Edward M. Kavick, Chardon, all of Ohio, assignors to Samuel Moore & Company, Mantua, Ohio
Filed Mar. 23, 1973, Ser. No. 344,211
Int. Cl. F16n 25/02
U.S. Cl. 184—7 D 10 Claims



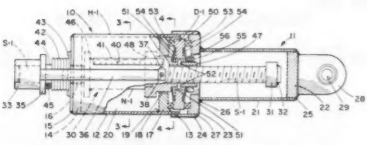
A metering valve and a modular valve assembly for a lubricating system for vehicles or the like are provided. The metering valve has a casing, a valve body with an axial bore therethrough disposed in the casing, a piston slidably disposed in the bore and carrying means for alternately sealing the bore upstream and downstream of a port leading to a chamber for measuring lubricant, means for applying to and withdrawing pressure from the piston, means for charging lubricant through the bore into the chamber when the sealing means is downstream of the port, and means for discharging the lubricant from the chamber in the absence of pump pressure. The casing may be the wall of a bore in a metal block which contains a plurality of bores and valve bodies to provide a unitary assembly of metering valves.

3,809,185
OIL FEED PUMP OF CHAIN SAW
Torao Kobayashi, Tokyo, and Hiromasa Miyata, Mitaka, both of Japan, assignors to Kioritz Corporation, Tokyo, Japan
Filed Oct. 17, 1972, Ser. No. 298,236
Int. Cl. F16n 13/14
U.S. Cl. 184—15 R 3 Claims



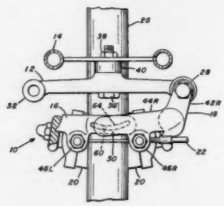
An oil feed pump of a chain saw is disposed in a chain saw crankcase. An adjustable pump cylinder is received in a crankcase cylindrical bore and has a pump plunger in said cylinder. A cam portion on the crankshaft reciprocates the pump plunger so that an oil passage which communicates with the cylinder bore delivers oil therein to be pumped to the point of use by the plunger.

3,809,186
MECHANICAL SHOCK AND SWAY ARRESTOR
Leonard S. Suozzo, 366 Maple Hill Dr., Hackensack, N.J.
Filed Dec. 14, 1971, Ser. No. 207,838
Int. Cl. F16f 7/10
U.S. Cl. 188—1 B 6 Claims



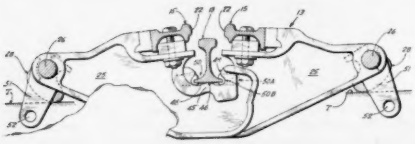
A mechanical arrestor for protecting equipment, such as high temperature piping, vessels, or the like, against shock loading or undesirable vibratory movement while permitting requisite movement of the equipment due to normal changes in temperature or thermal movement of the equipment. The arrestor includes a housing which is anchored at one end to a stationary structure; a screw member which is anchored to the equipment and which extends through the other end of the housing and terminates in the housing; a nut member within the housing and engaging the screw member; and a spring device which is also within the housing and which is connected to the nut unit. The spring device is rotatable with the nut member about the axis of the screw member and is slidable relative to the nut member. The parts are so constructed and arranged as to automatically adjust the effective length of the arrestor in response to normal changes in temperature or thermal movement of the equipment and to convert the arrestor into a rigid strut in the event the equipment is subjected to shock loading or the like.

3,809,187
BRAKE ASSEMBLY FOR VEHICLE WHEEL
Richard A. Grieve, 1610 S. 2nd St., Marshalltown, Iowa
Filed Oct. 20, 1972, Ser. No. 299,231
Int. Cl. B62l 1/14
U.S. Cl. 188—24 11 Claims



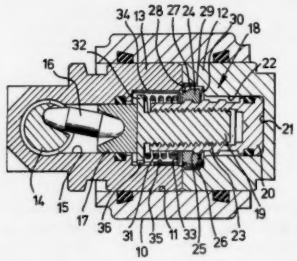
A brake assembly for a bicycle is disclosed which includes a yoke adapted to be mounted on a bicycle adjacent the rim of the wheel, a pair of arms pivotably connected to the yoke on opposite sides of the rim for swinging movement of a brake pad on the end of each arm toward and away from the vehicle rim and a manually actuable cable for pulling the arms toward one another and the wheel rim. The friction of the rim against the brake pads exerts a moment force on the arms which either increases or decreases the force of the pads against the rim depending on the direction of rotation of the wheel. A bicycle which has at least one such brake assembly mounted thereon is also disclosed.

3,809,188
RAILROAD CAR RETARDERS
Earl E. Frank, Tallman, N.Y., and Glenn R. Graham, Upper Saddle River, N.J., assignors to Abex Corporation, New York, N.Y.
Filed May 1, 1972, Ser. No. 248,929
Int. Cl. B61k 7/08
U.S. Cl. 188—62 17 Claims



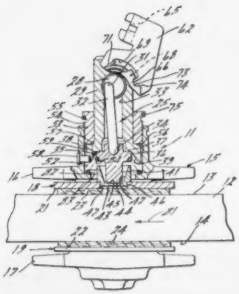
A retarder for installation in a railroad classification yard comprises a pair of retarder levers supporting retarder elements engageable with a car wheel. Noise is suppressed by modifying those elements. The levers are actuated by a cylinder assembly presenting opposed piston rods for applying actuating forces, and in order to eliminate any moment arm tending to bend the cylinder or piston rods, the cylinder is supported by a restrainer suspended from the traffic rail in the yard, provision being made for tangential contact between opposed surfaces of the cylinder assembly and the restrainer so that lines of force are constantly concentrated substantially at the axial center line of the cylinder assembly.

3,809,189
BRAKE ADJUSTERS
Glyn Phillip Reginald Farr, Kenilworth, England, assignor to Girling Limited, Birmingham, England
Filed Jan. 7, 1972, Ser. No. 216,210
Claims priority, application Great Britain, Jan. 13, 1971, 1623/71
Int. Cl. F16d 65/56
U.S. Cl. 188—71.9 16 Claims



A hydraulic brake actuator comprises opposed pistons and an automatic slack adjuster is operative between a first piston and a mechanical actuator fitted to the second piston. The adjuster comprises a first member sealingly slidable in a bore in said first piston, a second member screw-threaded in said first member and a third or ring member in reversible screw-thread connection with the first member and biassed by a spring into frictional engagement with the first piston. A further spring acts between the second piston and the second adjuster member in a direction opposite to the direction in which the hydraulic pressure acts on said first member.

3,809,190
DISK TYPE PARKING BRAKE
Anthony C. Evans, Westland, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.
Filed May 18, 1972, Ser. No. 254,657
Int. Cl. F16d 55/46
U.S. Cl. 188—72.2 14 Claims



A disk type parking brake embodying a tilting member interposed between the mechanical actuator and the brake pad. The tilting member is adapted to pivot upon the engagement of the brake pad with the associated rotor braking surface for generating a self-energizing action to assist in the brake operation. The point of the contact of the tilting member with the brake pad is defined by an arcuate surface generated about the point of pivotal movement so that the application forces to the brake pad always pass through the same point. An auto-

matic adjusting mechanism is also incorporated that adjusts the at-rest position of the actuator and the tilting member to compensate for wear. The tilting member is supported within a pocket and is engaged by a conical return spring.

3,809,191

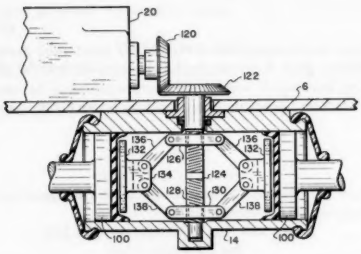
AUXILIARY BRAKING SYSTEM

Herber Jay Woodward, Salt Lake City, Utah, assignor to Index Industries, Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 847,278, Aug. 4, 1969, Pat. No. 3,613,356. This application Aug. 25, 1971, Ser. No. 174,756

Int. Cl. F16d *65/36*

U.S. Cl. 188—106 A 1 Claim



Electromechanical auxiliary braking systems are provided to supplement hydraulic braking systems. A reversible electric motor drives means for mechanically urging the brake shoes into or out of engagement with the brake drum. In some forms of the present invention, the mechanical means are located within the hydraulic cylinder of the hydraulic brake system and act upon the pistons thereof, while in other forms, the electromechanical system is completely independent of the hydraulic system and acts directly on the brake shoes.

3,809,192

BRAKE DISK FOR DISK BRAKES

Heinz Stehle, Stuttgart-Zuffenhausen, Germany, assignor to Firma Dr. Ing. h.c.F. Porsche KG, Stuttgart-Zuffenhausen, Germany

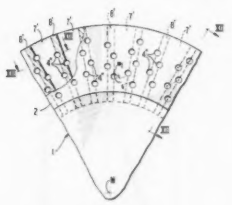
Filed Oct. 10, 1972, Ser. No. 295,954

Claims priority, application Germany, Mar. 25, 1970, 7011084

Int. Cl. F16d *65/12*

U.S. Cl. 188—218 XL 27 Claims

A brake disk for disk brakes, especially for high performance passenger motor vehicles, of the type having friction surfaces which are brought into friction contact with friction members of the disk brakes during braking operations. A plurality of recesses penetrating inwardly from the braking surfaces are provided for assisting in the cooling of the brake disk. The recesses are arranged in a uniform pattern over the braking surfaces along dividing lines interconnecting the centers of the recesses. In one preferred embodiment, the dividing lines are of zig-zag shape and are arranged symmetrically with respect to radii of the brake disk. Another preferred embodiment of the present invention arranges the dividing line as single or multiple spirals which extend spirally around the center of the brake disk. Another preferred embodiment arranges the dividing lines as curved vane-wheel blade shaped lines which are spaced from one another to exhibit a vane wheel configuration when viewed in a plane parallel to the braking surface. The preferred recess patterns may be arranged in either solid or ventilated brake disk. In the solid brake disk embodiments,



the recesses may extend either partly or completely through the brake disk. In the ventilated brake disk embodiments, the recesses extend through the brake disk and communicate with the hollow ventilating spaces between the portions of the brake disk. The recesses preferably partially overlap connecting webs between the two sections of the brake disk.

3,809,193

BRAKE ADJUSTERS

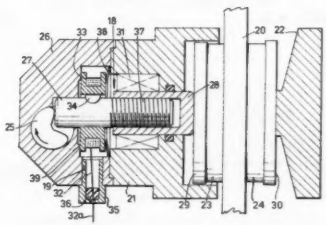
Anthony William Harrison, Birmingham, England, assignor to Girling Limited, Birmingham, England

Filed July 7, 1972, Ser. No. 269,841

Claims priority, application Great Britain, July 8, 1971, 32065/71

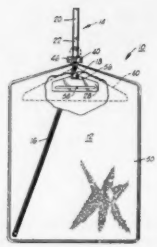
Int. Cl. F16d *65/56*

U.S. Cl. 188—196 BA 17 Claims



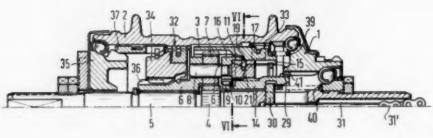
An automatic brake adjuster, e.g., for a spot-type disc brake is provided with a re-setting device which extends through a lateral opening in the housing of the adjuster generally radially of the adjuster and enables a normally non-rotatable and otherwise inaccessible screw member of the adjuster to be turned for re-setting the adjuster when worn brake linings are replaced by new linings. The re-setting device may comprise a wire, thread, chain or other elongate flexible member wound round a bobbin which is attached to the normally non-rotatable screw member. The wire or the like passes out of the housing through the access opening so that its free end can be pulled to re-set the adjuster. The lateral access opening is sealed to the re-setting device.

3,809,194
GARMENT BAGS
Warner A. Chappelle, 4801 N.W. 69th St., Oklahoma City, Okla.; Jerry A. Stead, 6383 E. Reno, Midwest City, Okla., and Harold D. Cheney, 2828 Manchester Dr., Oklahoma City, Okla.
Filed Sept. 21, 1972, Ser. No. 290,793
Int. Cl. A45c 3/00
U.S. Cl. 190—41 B 5 Claims



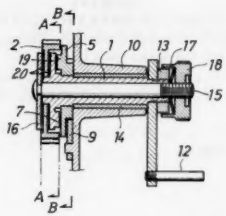
Apparatus constituting a garment bag for carrying and protecting clothing while in transit, the bag including structure which enables more facile carriage and transport while retaining decorative exterior appearance. The garment bag is constructed comprising a carrying strap of unitary formation which includes a new and novel hanger hook locking assembly and necktie carrying device.

3,809,195
MULTIPLE SPEED HUB WITH COASTER BRAKE
Horst Schulz; Hans-Joachim Schwerdhofer, both of Schweinfurt am Main, and Gunter Look, Grafenrheinfeld, all of Germany, assignors to Fichtel & Sachs AG, Schweinfurtam Main, Germany
Filed Feb. 20, 1973, Ser. No. 333,977
Claims priority, application Germany, Feb. 29, 1972, 2209535
Int. Cl. F16d 41/24; F16h 3/44
U.S. Cl. 192—6 A 10 Claims



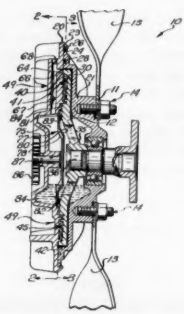
In a three-speed bicycle hub with internal hub or coaster brake, the transmission ratio between a driver and the hub shell is changed by axially shifting a coupling sleeve angularly secured to the driver between a high-speed position in which a claw coupling connects the sleeve to the planet carrier of planetary gearing in the hub shell, and a normal-speed position in which a double-acting pawl coupling connects the sleeve to the ring gear of the planetary gearing, overrunning clutches being interposed beteen the planet carrier and ring gear respectively and the hub shell. To prevent loss of braking function if the sleeve should accidentally become stuck between its two axial positions, cooperating cams on the pawls and the planet carrier move the pawls relative to the sleeve into the normal-speed position as soon as the claw coupling approaches disengagement.

3,809,196
ONE WAY POSITIVE CLUTCH WITH ONE WAY FRICTION BRAKE
Kamataro Moribe, Nagoya, Japan, assignor to D. Nagata Co. Ltd., Kobe, Japan
Filed May 30, 1972, Ser. No. 257,656
Int. Cl. F16d 67/02
U.S. Cl. 192—12 B 2 Claims



A one way positive clutch connects a handcrank drive shaft to a driven gear. A ratchet brake prevents the drive shaft from rotating backwards whereby a friction coupling between the drive shaft and gear functions as a drag brake for the gear.

3,809,197
VISCOUS COUPLING
Stephen M. Clancey, Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed Nov. 10, 1972, Ser. No. 305,376
Int. Cl. F16d 35/00
U.S. Cl. 192—58 B 10 Claims



A coupling for driving a cooling fan device associated with a vehicle may be located so that ram air impinges directly thereon. The coupling comprises relatively rotatable input and output coupling members. The output coupling member defines a chamber within which said input coupling member rotates. The input and output coupling members have a plurality of interdigitated lands and grooves which define a shear space therebetween and which are cooperable with viscous shear fluid in the shear space to transmit torque therebetween. A reservoir chamber 15 defined by said output member and means for directing viscous fluid from said shear space into said reservoir chamber is provided. Temperature-responsive valve means controls flow of viscous fluid from the reservoir chamber into the shear space and includes a temperature-sensing device located forwardly on said output member in the ram air stream. All of the lands and grooves on the output member are located on a forward position thereof which is directly in said ram air stream and all of the cooperating lands and grooves on the input member are located on a forward

portion thereof to thereby provide effective heat dissipation due to their location relative to the ram air stream. Means is provided for directing viscous fluid flow radially of the input and output members to distribute viscous fluid to the outer peripheral lands and grooves including two radially extending rectangular-shaped channels in the output member, and which are located diametrically opposite each other. The means for directing viscous fluid radially further includes three radially extending V-shaped channels in the input member and intersecting the lands and grooves thereon. The V-shaped channels and the rectangular-shaped channels are located such that on relative rotation of the input and output members, they periodically axially align to provide a large fluid flow area for directing viscous fluid radially thereof.

3,809,198

CLUTCH DISC WITH COIL AND RUBBER SPRINGS

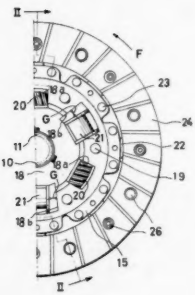
Masanori Mori, Toyota City, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya City, Japan

Filed June 29, 1972, Ser. No. 267,415

Claims priority, application Japan, June 29, 1971, 46-056739

Int. Cl. F16d *13/64*

U.S. Cl. 192—106.2 **5 Claims**



A clutch disc, particularly for use in motor vehicles, having at least two different types of elastic means, such as coil springs and elastic members of rubber, for absorbing torsional vibrations of the clutch disc, wherein openings in which one of the two different types of elastic means are disposed are designed such that no elastic force will act in one of the torque transmitting directions of the clutch disc, whereby it is possible to eliminate abnormal noises which are generated during substantially any stage of the torque transmission.

3,809,199

MACHINE FOR FASHIONING THE STRUCTURES OF FLEXIBLE PRODUCTS, AND PRODUCTS FASHIONED THEREBY

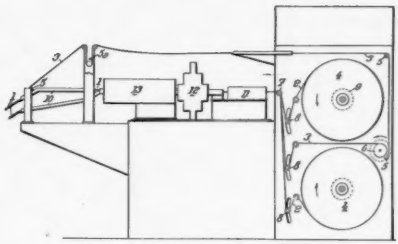
Pierre Etienne Bessiere, Golf Saint-nom-la-Breteche, France, assignor to Precision Mecanique Labinal, Saint-Oune (Seine-Saint-Denis), France

Filed Nov. 30, 1972, Ser. No. 310,694

Int. Cl. B31d *5/04*

U.S. Cl. 93—84 **28 Claims**

The machine is designed to produce pleated developable herring bone structures, such as used as filter elements in the motor industry. The machine includes first means for scoring longitudinal fold lines on a band transversely spaced by the width of half-chevron and for initiating folds about these lines to obtain the chevron pattern, second means for producing transverse folding lines to form the folds half-fold by half-fold and accentuate the chevrons on each half-fold, third means for imparting the final shape to the chevrons and formed by convergent differentially moving rakes directed substantially longitudinally, and fourth means for moving the fashioned structures out of the machine. The starting material comprises two tapes initially wound on respective reels and, as these two



tapes pass through the machine, there is interposed therein an endless supporting tape. A novel electrical control arrangement is provided whereby the machine may be operated in automatically repeated cycles, cycle by cycle, or operation by operation.

3,809,200

CLUTCH DISC WITH REMOVABLE FRICTION PADS

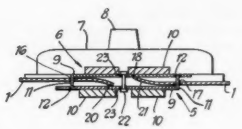
Herbert Smales, Morley, England, assignor to BBA Group Limited, Cleckheaton, Yorkshire, England

Filed June 19, 1972, Ser. No. 264,330

Claims priority, application Great Britain, June 22, 1971, 29189/71

Int. Cl. F16d *13/64*

U.S. Cl. 192—107 C **8 Claims**

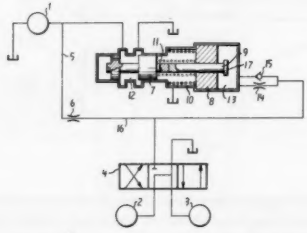


A clutch plate assembly having a center boss part and pad elements removably mounted on the periphery of the center boss part and extending outwardly therefrom. Each pad element includes a backing plate and a pad of friction material firmly secured thereto. The pad elements are mounted in pairs which are peripherally spaced around the center boss part, the pad elements in each pair being mounted with their backing plates axially opposed in back-to-back relationship and each backing plate being capable of flexing axially relative to the center boss part and the backing plate which opposes it. A cushioning surface, preferably in the form of a spring plate, is interposed between each pair of opposed backing plates to provide a cushioning effect for at least one of the pad elements of a pair when the backing plates are flexed axially towards each other. Also, a restraining element preferably constituted by one or more pins is provided for restraining flexure of the backing plates of each pair axially away from each other beyond a predetermined spacing.

3,809,201
MODULATING VALVE FOR VEHICLE TRANSMISSION SYSTEMS

Noritake Miyanishi; Shigeru Kubota, both of Ogaki; Hirotoshi Baba, and Masahiro Takahashi, both of Akashi, all of Japan, assignors to Kobe Steel, Ltd., Kobe and Shinko Engineering Co., Ltd., Ogaki-city, both of, Japan

Filed Oct. 30, 1972, Ser. No. 301,950
Claims priority, application Japan, Oct. 30, 1970, 45-86504
Int. Cl. F16k *31/163, 31/363*
U.S. Cl. 192—109 F **4 Claims**

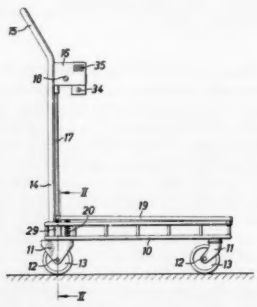


A modulating valve capable of shortening the operating time of the clutch and also preventing the generation of an impulsive torque in the clutch-transmitted power by discontinuously changing the rate of variation of pressure used for pressing together the frictional members of the friction clutch. In order that the force, acting upon the valve body of the pressure regulating valve, will vary discontinuously relative to time, a plurality of independently slidable pistons are provided so that a discontinuously varying force will be generated by the strokes of these pistons. Thus, according to this arrangement, pressure, varying with the time in a manner that is not readily achievable with conventional systems, can be used for pressing together the frictional members, thereby realizing an operation with reduced working time and which is free of impulsive torque.

3,809,202
LUGGAGE TROLLEYS

Stefan Eugene Tyszkiewicz, Villa Les Cypres, Chemin Ermitage, 06 Antibes, France

Filed June 12, 1972, Ser. No. 261,653
Claims priority, application France, June 16, 1971, 7121893
Int. Cl. G07f *17/00*
U.S. Cl. 194—1 R **13 Claims**



A luggage trolley having a brake which is applied when the trolley is laden and which has a coin operable brake release mechanism for releasing the brake whilst the trolley is laden. The brake release mechanism may be arranged to be released by use of a key so that authorised personnel may use the torley to transport luggage without payment of the appropriate fee.

3,809,203
CHINESE CHARACTER (KANJI) TELEPRINTER OR A CHINESE CHARACTER (KANJI) PUNCHING TYPEWRITER OR SIMILAR APPARATUS

Shimeo Ogawa, Kitakami; Koji Shinozaki, Hanamaki, and Shinpei Chida, Kitakami, all of Japan, assignors to Yamura Kabushiki Kaisha Shinkoseisakusho, Hanamaki-shi, Iwateken, Japan

Filed Jan. 31, 1972, Ser. No. 221,937
Int. Cl. B41j *3/50*
U.S. Cl. 197—1 A **7 Claims**

				b_7	0	0	1	1	1	1
				b_6	0	0	1	1	0	0
				b_5	0	1	0	1	0	1
b_4	b_3	b_2	b_1		0	1	2	3	4	5	6	7
0	0	0	0	0	NUL	TC₇DLE	SP	0	@	P		p
0	0	0	1	1	TC₁SOH	DC₁	!	1	A	Q	a	q
0	0	1	0	2	TC₂STX	DC₂	"	2	B	R	b	r
0	0	1	1	3	TC₃ETX	DC₃	#	3	C	S	c	s
0	1	0	0	4	TC₄EOT	DC₄	$	4	D	T	d	t
0	1	0	1	5	TC₅ENQ	TC₈NAK	%	5	E	U	e	u
0	1	1	0	6	TC₆ACK	TC₉SYN	&	6	F	V	f	v
0	1	1	1	7	BEL	TC₁₀ETB	'	7	G	W	g	w
1	0	0	0	8	FE₀BS	CAN	(	8	H	X	h	x
1	0	0	1	9	FE₁HT	EM	)	9	I	Y	i	y
1	0	1	0	10	FE₂LF	SUB	*	:	J	Z	j	z
1	0	1	1	11	FE₃VT	ESC	+	;	K	[	k	
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1	1	0	1	13	FE₄CR	IS₃(GS)	−	=	M	]	m	
1	1	1	0	14	SO	IS₂(RS)	.	>	N	^	n	
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A teleprinter apparatus for typeing or tape punching Roman alphabet characters, numbers, and symbols, and Chinese characters includes a platen and means for spacing and rotating the platen and operating the tape punching means. Code unit receiving means is provided for receiving multi-element code units representing characters, symbols, numbers and functions to be carried out by the apparatus, and the apparatus has a plurality of function means responsive to receipt of function code units for driving the apparatus for carrying out the functions represented by the function code units. Conversion function means is provided which is responsive to the receipt of conversion function code units for converting the apparatus from a normal operational state in which it prints Roman characters, numbers and symbols to a Chinese character operational state in which it prints Chinese characters and vice versa. One of said function means is spacing function means for driving the platen spacing means for every two code units received by said code unit receiving means, and this spacing function means is coupled to the conversion function means for actuation when the apparatus is in the Chinese character operational state. The apparatus has printing means for printing characters, symbols and numbers on the platen, and transmission means are coupled to the code unit receiving means for receiving single code units and when they are for characters, numbers and symbols to be printed, transmitting them, further transmission means are coupled to the code unit receiving means for receiving code units corresponding to characters, numbers and symbols, storing them and then transmitting them when the apparatus is in the normal operation state and when the apparatus is in the Chinese character operational state transmitting the second code unit of each pair directly to the printing means. One of said function means is normal printing function means coupled to the further transmission means for causing the further transmission means to store the code unit and transmit it to the printing means. One of said function means is Chinese character printing function means coupled to the further transmission means for coupling the further transmission means directly to

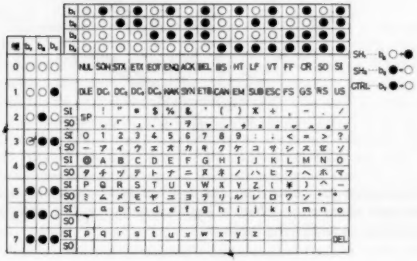
the printing means, and one of the function means is tape punching function means for coupling the respective transmission means to the tape punching means.

3,809,204

KEYBOARD SYSTEM FOR CHINESE CHARACTER TELEPRINTER, CHINESE CHARACTER TYPEWRITER, MONOTYPE ETC.

Shimeo Ogawa, Kitakami, Japan, assignor to Yamura Kabushiki Kaisha Shinkoseisakusho, Hanamaki-shi, Iwate-ken, Japan

Filed Dec. 27, 1971, Ser. No. 212,330
Int. Cl. B41j *3/50*
U.S. Cl. 197—1 A **5 Claims**



A teleprinter apparatus for producing pairs of seven element code units which together represent a character or symbol, such as a Chinese character. The apparatus has a keyboard much like the keyboard of a conventional teleprinter or typewriter for typing Roman letters, numbers and symbols, and the keyboard is connected to conventional apparatus for producing seven element code units each time a key is depressed. As a guide to the pairs of keys which are to be depressed to produce desired pairs of code units for representing the desired character, there is provided a character board which has two sets of blocks thereon. Each set has the same number of blocks as there are keys, and each block in each set corresponds to an individual key character. The blocks are in the same arrangement as the arrangement of the keys. Each of the blocks in one set has therein a plurality of characters for which code units are produced, and the characters are arranged in the same pattern as the pattern of the keys on one half of the keyboard. Each of the blocks in the other set has the characters arranged therein in the same pattern as the keys on the other half of the keyboard. A character for which the code units are to be produced is located in one of the blocks on the character board, and the key corresponding to the block is actuated to produce the first code unit and then the key corresponding to the position of the character in the block is actuated to produce the second code unit.

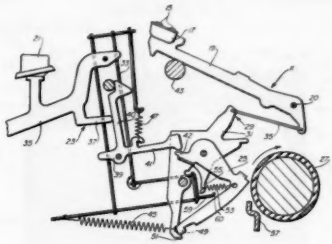
3,809,205

POWERED TYPE ACTION WITH A CAM ARRESTOR

Theodore Madison, Wethersfield, Conn., assignor to Litton Business Systems, Inc., New York, N.Y.

Filed Nov. 3, 1972, Ser. No. 303,353
Int. Cl. B41j *23/08*
U.S. Cl. 197—16 **4 Claims**

A type action, which is driven by a cam engaging a rotatably driven power roll, is provided with a cam arrestor for preventing the cam from returning directly to a rest position where it would normally bounce off a stop formed in a type linkage and



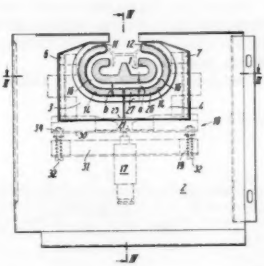
possibly reengage the power roll to cause an unintended repeated operation of the type action.

3,809,206

SAFETY ARRANGEMENT FOR ESCALATOR HANDRAILS AND THE LIKE

Friedrich Bredehorn, Hamburg, and Heinz Doge, Norderstedt, both of Germany, assignors to Rheinstahl Eggers-Kehrhahn GmbH, Hamburg, Germany

Filed Apr. 27, 1972, Ser. No. 251,534
Int. Cl. B66b *9/12*
U.S. Cl. 198—16 R **23 Claims**



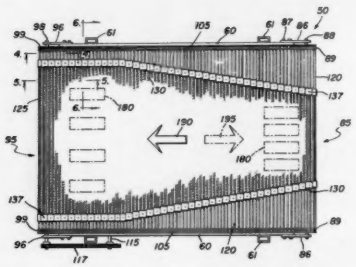
A safety arrangement for escalators, moving sidewalks and the like includes a handrail cover defining an opening and including bounding parts movable between normal and released positions. An escalator handrail, or other movable component, moves through the opening into the handrail cover. The handrail defines with the bounding parts a clearance which, when the bounding parts are in their normal position, has a first cross-sectional area and constitutes a hazardous point of entry for fingers and hands. When the bounding parts are in their released position, the clearance between handrail and bounding parts has a larger second cross-sectional area facilitating the removal of finger or hands introduced into the clearance. The safety arrangement further includes a release arrangement positioned at the opening for normally preventing movement of the bounding parts to released position. The release arrangement is actuatable by a finger or hand introduced into the clearance for permitting movement of the bounding means to released position.

3,809,207

CONVERGING AND DIVERGING CONVEYOR

Maynard R. Euverard, Clarendon Hills, Ill., assignor to Velten & Pulver, Inc., Chicago Ridge, Ill.

Filed Dec. 11, 1972, Ser. No. 313,660
Int. Cl. B65g 47/26
U.S. Cl. 198—34 7 Claims



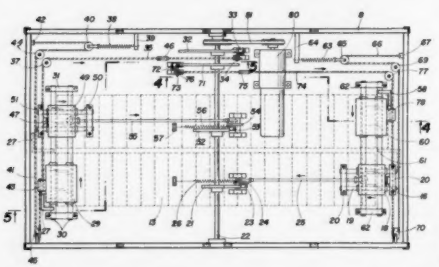
A conveyor for converging and diverging a row of articles wherein a plurality of elastic supports are movable along a predetermined path and provide a plurality of support points for the articles. An adjustable guide structure is provided for controlling movement of the ends of the elastic supports in a direction transverse to the predetermined path along with means for maintaining contact between the ends of the elastic supports and the adjustable guide structure. Drive mechanism moves the elastic supports along the predetermined path. The elastic supports provide support points for the articles which converge and diverge according to the position of the guide structure as the elastic supports move from the infeed end of the conveyor to the discharge end of the conveyor.

3,809,208

APPARATUS FOR ADVANCING ARTICLES RELATIVE TO FILLING AND SEALING DEVICES

Walter A. Shields, Jamaica, N.Y.

Filed June 12, 1972, Ser. No. 262,060
Int. Cl. B65g 37/00
U.S. Cl. 198—85 5 Claims



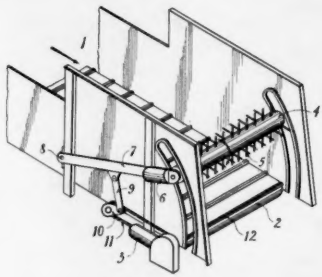
The articles are intermittently advanced in two parallel rows and in opposite directions by separate first means simultaneously reciprocated in opposite directions and are transferred from the first row to the second row and from the second row to the first row by separate second means simultaneously reciprocated in opposite directions. The first means advancing the articles in each row before the second means transfer the leading article in each row to the other row to leave a space at the receiving end of each row to receive the article transferred by the second means.

3,809,209

APPARATUS FOR CONTROLLING THE FEED OF LOOSE MATERIAL

Yngve Reinhold Akesson, Halsingborg, Sweden, assignor to Produits Findus S.A., Vevey, Switzerland

Filed May 12, 1972, Ser. No. 252,800
Claims priority, application Switzerland, May 18, 1971, 7255/71
Int. Cl. B65g 15/00
U.S. Cl. 198—167 3 Claims



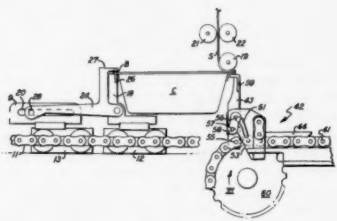
Apparatus for controlling the feed of loose material in a transport channel, in which a shaft carrying rotating arms is carried by an oscillating support.

3,809,210

METHOD AND APPARATUS FOR CONVEYING A CONTAINER

Andrew W. Anderson, West Caldwell, N.J., assignor to Scandia Packaging Machinery Company, Clifton, N.J.

Filed Mar. 3, 1972, Ser. No. 231,588
Int. Cl. B65g 15/00
U.S. Cl. 198—179 10 Claims



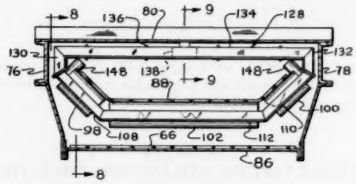
The conveyor assembly includes endless means for moving at least one container along a path. A first means is mounted on the moving means for supporting the container along a first side thereof. A second means is mounted on the moving means for supporting the container along a side opposite said first moving means. The first and second support means are capable of providing sole support for the container as it moves along the path. The conveyor assembly is particularly useful in feeding rimmed tray containers through a wrapping machine. More particularly, while the first and second support means are holding the container on opposite sides thereof, a cover sheet is being folded along adjacent unsupported side rims as the container moves along a path. A further feature is directed to a mechanism which operates when the conveyor means changes direction. Another feature of the invention is directed to the adaptability for the conveyor assembly to various sized containers.

3,809,211

CONVEYOR SYSTEM

Benjamin A. Padilla, 314 Illinois Ave., Maumee, Ohio

Filed Dec. 14, 1971, Ser. No. 207,767
Int. Cl. B65g 15/08
U.S. Cl. 198—192 R 3 Claims



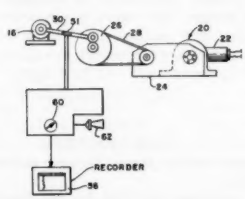
An enclosed conveyor system is provided, especially designed for conveying grain or similar materials with which air-borne fines or dust is a problem. The conveyor is totally enclosed thereby to eliminate the hazards of grain dust and the need for an expensive air-suction system. The dust is retained within the enclosure and is returned to the conveyor to substantially reduce the losses otherwise incurred. Idlers for the belt of the conveyor are rigidly supported from the side or above and the return run of the belt is located directly below the upper run to receive any spills. The return run of the belt is supported on a flat bottom wall of the enclosure with no idlers being used. This reduces expense and also substantially decreases the overall height of the conveyor. The spills and dust are collected at the tail pulley of the conveyor and returned to the upper run of the conveyor belt. The enclosed conveyor also employs unique self-aligning idler assemblies which are pivotally supported from the top wall of the enclosure.

3,809,212

CONTROL FOR RECIPROCATING GRATE CONVEYOR

Walter C. Gothe, Macungie, Pa., assignor to Fuller Company, Catasauqua, Pa.

Filed July 31, 1972, Ser. No. 276,491
Int. Cl. B65g 43/00
U.S. Cl. 198—232 1 Claim



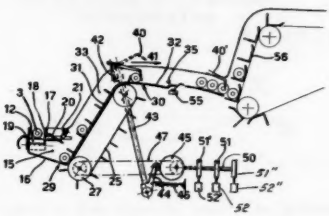
A control for a reciprocating grate conveyor wherein the conveyor includes support structure which supports alternate rows of fixed and movable grates with a motor and transmission arrangement for reciprocating the movable grates to advance material along the conveyor. The control system includes a strain gage network mounted on the crank shaft of the movable grate drive mechanism. The strain gages generate a signal proportional to the forces on the means for reciprocating the movable grates. An arrangement is provided whereby when the force exceeds a first predetermined maximum, an alarm is sounded. If the forces on the drive mechanism exceed a second, higher predetermined maximum, the conveyor drive motor is stopped.

3,809,213

DEVICE FOR WITHDRAWING AND POSITIONING COPS AND BOBBINS IN BULK

Luciano Savio, Pordenone, Italy, assignor to Officine Savio S.p.A., Pordenone, Italy

Filed Apr. 26, 1972, Ser. No. 247,834
Claims priority, application Italy, Apr. 4, 1971, 83338/71
Int. Cl. B65g 47/24
U.S. Cl. 198—33 AA 7 Claims



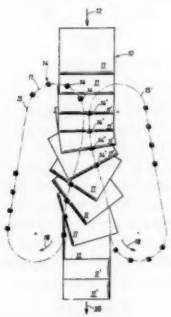
Conveyor means for withdrawing cops or bobbins stored in bulk in a storage container formed with an outlet ramp. The conveyor means including lower belt sections spaced and proportioned with respect to each other so as to pre-position and maintain the cops or bobbins with their axes side-by-side in parallel alignment, and wherein the final section of the lower belt sections is provided with air jet means to erect loose yarn ends and with means to cut said loose yarn ends prior to final removal for use in automatic spooling machines or the like.

3,809,214

TURNING CONVEYOR FOR FLAT STRUCTURES, ESPECIALLY PRINTED PRODUCTS

Walter Reist, Hinwil, Switzerland, assignor to Fehr & Reist AG, Hinwil, Switzerland

Filed Aug. 28, 1972, Ser. No. 284,366
Claims priority, application Switzerland, Sept. 14, 1971, 13421/71
Int. Cl. B65g 47/24
U.S. Cl. 198—235 10 Claims



A turning conveyor for flat structures, especially printed products, arriving in an essentially fish-scale formation at a main conveyor. The turning conveyor encompasses a plurality of entrainment members which move along with the flat structures and each of which can be brought into engagement with a respective one of the flat structures. The entrainment members are controlled such that at least at the time that they are in engagement with a flat structure they carry out a relative

movement with regard to the direction of movement of the main conveyor in order to turn the flat structures during the course of conveying same about an axis which is perpendicular to the flat structures.

3,809,215
INFUSION PACKAGE

Reuven Dobry, Stamford, Conn., assignor to Tetley Inc., New York, N.Y.

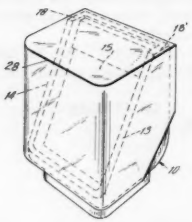
Filed Feb. 7, 1972, Ser. No. 221,017
Int. Cl. B65d *85/10*
U.S. Cl. 206—0.5 **6 Claims**

Providing an infusion package, such as a tea bag, with means for holding the bag in a horizontal floating position during steeping results in a more rapid quiescent extraction without mixing or dunking of the bag, and in a greater yield of extract over a given period of time than is otherwise attainable with conventional tea bags.

3,809,216
DISPLAY CASE

Howard Ferguson, Valley Cottage, N.Y., assignor to Arrow Manufacturing Company, Inc., West New York, N.J.

Filed Oct. 30, 1972, Ser. No. 302,285
Int. Cl. B65d *5/52, 25/00, 43/14*
U.S. Cl. 206—45.34 **3 Claims**



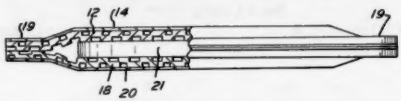
The invention relates to a display case or box for watches, pencils, pens, articles of jewelry and similar items, which has a container for the item to be displayed, a cover for the container, a pedestal to hold the container in elevated position and hinge arrangements between the container and cover which permits the cover to be opened by an approximately 180° rotation whereby the cover, in open position, fits snugly about the container, without disturbing the equilibrium of latter or projecting into the surrounding space.

3,809,217
PACKAGING FOR FLAT OBJECTS

Brian G. Harrison, Drexel Hill, Pa., assignor to Franklin Mint Corporation, Yeadon, Pa.

Division of Ser. No. 843,526, July 22, 1969, Pat. No. 3,597,894. This application Oct. 27, 1970, Ser. No. 84,443
Int. Cl. B65d *85/30, 85/58, 27/30*
U.S. Cl. 206—.84 **4 Claims**

Coins or other generally flat objects are packaged by being sandwiched between plastic layers at least one of which has an embossed surface juxtaposed to the coin or object to prevent tracing the surface contour thereof through said one layer. The plastic layer is of stiff plastic material such as styrene so that it cannot be opened by heat or will rupture or crack if



tampered with. Indicia on a paper layer joined to the plastic layer is printed with ink which is soluble in aromatic hydrocarbon solvents such as toluol.

3,809,218
PLIABLE TAPE RECORD AND REEL THEREFOR

Marcel Furst, Sunnyvale, Calif., assignor to Newell Industries, Inc., Sunnyvale, Calif.

Filed Jan. 24, 1972, Ser. No. 220,168
Int. Cl. B65d *85;* **G03b** *1/04, 1/56;* **G11b** *23/10*
U.S. Cl. 206—53 **3 Claims**

A tape record adapted to be coiled to form a roll thereof between the flanges of a support reel wherein the tape record comprises an information portion and terminal end portions. The tape record is characterized by means imparting resilient lateral compliance to at least one of the end portions to permit resilient reduction in the width occupied by the end portion when pressed between the flanges of a support reel thereby retaining the laterally reduced end portion between the flanges. More generally, a reel of pliable tape is provided comprising a cylindrical hub having flanges carried by the ends of the hub. A pliable tape record is wrapped about the hub between the flanges. The record has an information portion and a terminal end portion. The reel is characterized by resilient means yieldingly retaining engagement between the side edges of the end portion and the flanges.

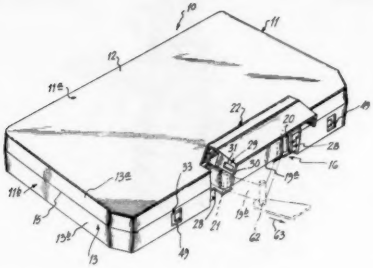
3,809,219
TAPE CASSETTE

Hanjiro Esashi, Sendai, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 14, 1972, Ser. No. 244,210
Claims priority, application Japan, Apr. 22, 1971, 46-31739
Int. Cl. A47j *27/08, 36/10;* **B65d** *45/00*
U.S. Cl. 220—55 K **12 Claims**

In a tape cassette housing having an opening through which magnetic tape contained in the housing can be engaged and withdrawn from the housing, for example, for the recording and/or reproducing of signals on the tape by means of a head assembly outside the cassette, and a pivoted lid for closing such opening; a latch mechanism is provided for locking the lid in its closed position to normally protect the tape, and such latch mechanism is released by an actuating element which is inserted into the cassette housing in the normal course of the positioning of the cassette in the holder therefor of the recording and/or reproducing apparatus. The latch mechanism includes a keeper on the lid disposed within the cassette housing

adjacent an edge of the opening when the lid closes such opening, and a latching element slidable rectilinearly in a guide provided at the inside of a wall of the housing and having a latch nose at one end of the latching element engageable with the keeper under the urging of a spring. The housing wall and



latch element have adjacent apertures which are normally offset relative to each other and which are brought into registry by the penetration of the actuating element through the wall aperture, whereby to displace the latching element against the force of the spring for relasing the latch nose from the keeper.

3,809,220

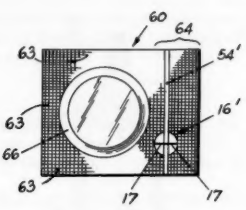
CHILD SAFETY PACKAGE

Joseph Arcudi, Elizabeth, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed July 24, 1972, Ser. No. 274,304

Int. Cl. B65d *83/04, 85/56*

U.S. Cl. 206—484 **15 Claims**



A sealed package that is openable by adults but which is sufficiently difficult for children to open is disclosed. The sealed package is preferably in the form of an envelope of the type having a pocket or cavity for receiving and storing a material such as a drug. The sealed package is preferably made from a plastic film which is flexible, liquid impervious and resists tearing even by adults but which will tear when manipulated to expose a hidden tear zone positioned away from any of the exposed sealed edge portions. Thus, the package in the sealed and unmanipulated position is in an inoperative tear resistant position and when manipulated is in an operative tear or opening position.

3,809,221

RUPTURABLE BLISTER PILL PACKAGE WITH SAFETY BACKING

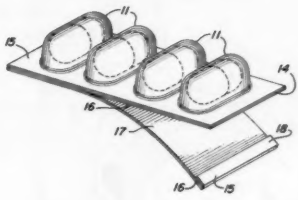
Newton L. Compere, 775 N. Bank Ln., Lake Forest, Ill.

Filed Oct. 10, 1972, Ser. No. 296,192

Int. Cl. B65d *75/42, 75/46, 83/04*

U.S. Cl. 206—461 **10 Claims**

A rupturable press-through blister type medicament or pill package is "childproofed" by securing a strong flexible polymeric backing sheet, such as polyethylene terephthalate, over the rupturable sheet in such a manner that the pill cannot



be forced through the package unless the backing sheet is first peeled off.

3,809,222

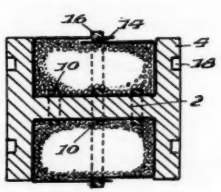
SEALED PACKAGE OF FLEXIBLE MATERIAL AND METHOD OF MAKING THE SAME

James W. Newman, Scarsdale, N.Y., assignor to Windings, Inc., Yonkers, N.Y.

Filed Nov. 13, 1972, Ser. No. 305,683

Int. Cl. B65d *85/04*

U.S. Cl. 206—398 **2 Claims**



In order to enclose a coil of flexible material in an air-tight manner, a spool with end discs and a spindle portion is enclosed within a sleeve of flexible air-tight plastic. The part of the sleeve between the end pieces is drawn in and held against the spindle portion of the spool, leaving substantial extensions beyond the end pieces at each end. The flexible material is then wound on the spool, and the extensions of the sleeve are folded inwardly to overlap each other and secured to each other in an air-tight manner.

3,809,223

PROTECTED LUMBER PACKAGE AND METHOD OF MAKING SAME

Burt C. Kendall, Aptos, Calif., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

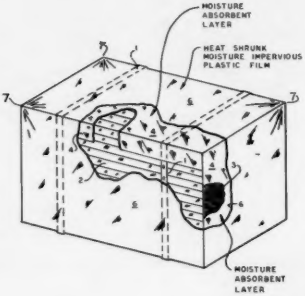
Filed Aug. 27, 1971, Ser. No. 175,455

Int. Cl. B65d *85/46*

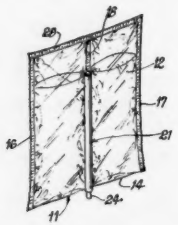
U.S. Cl. 206—204 **12 Claims**

Conventionally stacked lumber is protected from weathering by an envelope of moisture impervious plastic sheet film material which is heat-shrinkable. To prevent mold growth and discoloration of the lumber by moisture which would become trapped between the film and the lumber, resulting

from entrapped air and the vaporization of moisture inherently present in the lumber, a layer of moisture absorbent material is provided at least over the top of the stack between the plastic envelope and the lumber. Heat shrinking of the film effects a tightly bonded reinforced package.



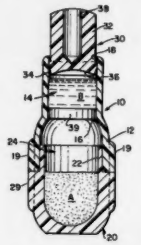
3,809,224
COMPARTMENTED POUCH
David L. Greenwood, 3118 Sandy La., Glenview, Ill.
Filed Feb. 14, 1972, Ser. No. 225,754
Int. Cl. B65d *31/12, 81/32*
U.S. Cl. 206—219 **7 Claims**



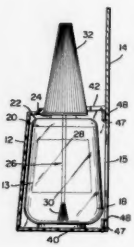
A compartmented flexible pouch is provided for filling with at least two liquid materials which are to be stored in isolation from each other. The pouch is made of a thin liquid-impervious flexible film and has front and rear panels joined to each other about all edges except one to leave an opening. Extending from the opening toward the opposite edge there is a linear permanent seal between the inner faces of the two panels extending a first portion of the distance and a linear clamp seal extending the remainder of the distance. The clamp may be removed just prior to use of the composition to permit the two components to blend within the pouch.

3,809,225
CONTAINERS
Pierre Allet-Coche, Paris, France, assignor to Jean-Jacques Goupil, Cachan, France
Continuation-in-part of Ser. No. 703,422, Feb. 6, 1968, abandoned. This application May 1, 1970, Ser. No. 33,780
Claims priority, application France, May 2, 1969, 69.14008
Int. Cl. B65d *81/32;* **A61b** *19/02*
U.S. Cl. 206—220 **16 Claims**

Small reusable containers with two compartments for storing, transporting and intermixing pre-proportioned substances such as a metallic powder and mercury used in making a dental amalgam, provided with a displaceable disk-shaped partition between the compartments to prevent intermingling of the substances during storage and transportation but which, when displaced by way of a pusher, and with the intermingling of the substances, acts as a pestle in aiding trituration of the substances into the dental amalgam.

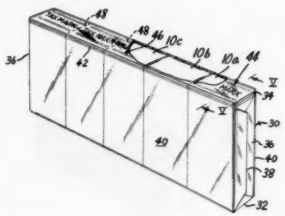


3,809,226
DISPLAY PACKAGE FOR COSMETICS
Luigi M. Ferrari, Douglaston, N.Y., assignor to Del Laboratories, Inc., Farmingdale, N.Y.
Filed Jan. 24, 1972, Ser. No. 220,226
Int. Cl. B65d *73/00*
U.S. Cl. 206—78 B **4 Claims**



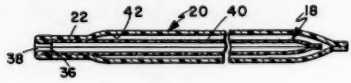
A display package for a cosmetic product such as lipstick or nail lacquer which product is composed of two parts, one being a handled cosmetic applicator such as a brush or lipstick rod, and the second being a part with an open-ended cavity such as a cap or a bottle, to receive the applicator and ensheathe the same with the handle outside the second part. The two parts are detachably interengageable when the applicator is ensheathed in the second part. The second part has a shoulder near its open end, but otherwise is of substantially uniform configuration. The cosmetic product is secured to a flat panel by a pocket which is shaped to receive the second part. The packet can have an open top through which the handle of the first part extends or it may completely enclose both the first and second parts. The panel can have a hole therein aligned with the second part so that the second part could be directly gripped and forced toward a wall of the pocket. The open top of the pocket has an inwardly directed flange which forms an interference fit with the cosmetic product so as to captively hold the cosmetic product stationary while permitting removal of the first part through manipulation of the handle. Other embodiments are also shown herein.

3,809,227
CIGARETTE PACKAGING
Carl J. Begemann, Miami, Fla., assignor to Philip Morris Incorporated, New York, N.Y.
Filed Oct. 13, 1972, Ser. No. 297,262
Int. Cl. B65d 85/10
U.S. Cl. 206—264 8 Claims



Cigarette packages are wrapped in an aligned single row or assembly of five such packages, so that two such wrapped assemblies can be placed side-by-side in a conventional carton making a unit sale of five prepackaged packages possible if desired. The cigarette packages in each assembly are connected in linked together assembly by means of a component superposed on and secured to one end surface of each package, the component being provided as an elongated strip which has frangible segments therein extending transversely of the strip in regions where the strip overlies the location of abutment of each package with an adjacent package. If unit sales of less than five packages are desired, a selected package or packages can be removed from the assembly by severing the strip along appropriate frangible segments, with the associated strip portion remaining secured to the package or packages which have been removed, the strip portion associated with the removed packages bearing the tax marking indicia required by most localities remaining affixed to such packages at the time of retail sales of the same.

3,809,228
TEMPERATURE PROBE COVER
Charles F. Fowler, 5157 Park West Ave., San Diego, Calif., and Samuel G. Dawson, 1869 Hidden Mesa Rd., El Cajon, Calif.
Continuation-in-part of Ser. No. 85,388, Oct. 30, 1970, abandoned. This application Mar. 1, 1972, Ser. No. 230,790
Int. Cl. B65d 85/20
U.S. Cl. 206—306 18 Claims

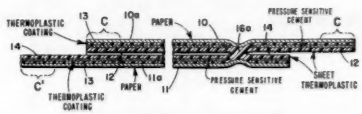


A temperature probe cover with an inner sheath and outer jacket, with the inner sheath constructed of thin virtually nonporous sheet material that is capable of being sterilized during manufacture along with the inner surface of the jacket. The exterior of the inner sheath is sealed and remains sterile within the outer jacket until the latter is removed, normally after insertion of the thermometer probe into the inner sheath. The jacket is preweakened at a point adjacent the seal allowing localized rupture of the jacket without endangering the integrity of the sealing of the inner sheath. The sheath and jacket have an opening that is spaced for easy insertion of the temperature probe.

3,809,229
PROPHYLATIC ENCLOSURE FOR CLINICAL THERMOMETERS DURING USE
James William Wahlig, 195-17 Station Rd., Flushing, N.Y.
Filed May 6, 1971, Ser. No. 140,797
Int. Cl. G01k 1/08; B65d 85/20
U.S. Cl. 206—306 1 Claim

An enclosure within which an elongated medical thermometer is to be placed prior to insertion into the body orifice of the subject whose temperature is to be taken. The enclosure may be secured to the thermometer at its heat sensitive portion. This enclosure will enable attainment of a level of asepsis presently obtainable only by discard of the thermometer itself after one-time use.

3,809,230
SHEATH-PACKAGE AND METHOD
George William Poncy, Chatham, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.
Continuation-in-part of Ser. Nos. 77,917, Oct. 5, 1970, Pat. No. 3,732,975, Continuation-in-part of Ser. No. 736,218, June 11, 1968, Pat. No. 3,552,558. This application July 17, 1972, Ser. No. 272,159
Int. Cl. A61b 19/02; B65d 85/08
U.S. Cl. 206—306 15 Claims

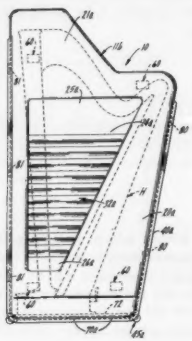


The sheath-package comprises an outer cover and an inner sheath formed of heat sealable material, with a layer of releasable bonding material sandwiched between the cover and sheath for releasably bonding them to each other over substantially the entire outer surface of the sheath. The cover and sheath have an opening through which an instrument can be inserted into the sheath. The sheath is formed from two sheets joined along a seal line which defines the sheath. The cover is strippable from the sheath upon the insertion of an instrument therein, whereupon the sheath and sheathed instrument are exposed for use.

3,809,231
HARP TRUNK
Joseph Palma, Wheaton, and Henning Christiansen, Oak Lawn, both of Ill., assignors to Lyon and Healy, Inc., Chicago, Ill.
Filed Aug. 24, 1971, Ser. No. 174,392
Int. Cl. B65d 85/54; A45c 5/14
U.S. Cl. 206—314 9 Claims

A harp trunk comprising two tub-like sections which open in clam-shell fashion to receive or disgorge a harp. The trunk sections each comprise vacuum formed or molded plastic shells having vertically elongated depressions formed therein.

The depression bases are horizontally corrugated. The depressions rigidify the shells. Skid rails encircle three sides of the



trunk and mount wheels at its bottom. Rollers are recessed in one section wall. Resilient members within the sections grip the harp within the trunk.

3,809,232

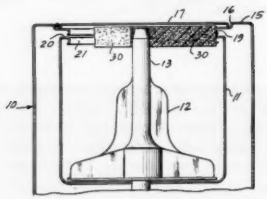
PACKING BRACE FOR WASHING MACHINES AND THE LIKE

Joseph B. Kennington, Wheaton, Ill., assignor to Francis P. Brennan, Lisle, Ill.

Filed Aug. 21, 1972, Ser. No. 282,391

Int. Cl. B65d *81/06*

U.S. Cl. 206—320 **3 Claims**



Packing brace for automatic washing machines, bracing the agitator, spin basket and casing of the machine from movement relative to each other during moving of the machine from place to place. The brace is made from a single block of resilient plastic material. Parallel slits separate the block into a plurality of bracing arms. The slits are enlarged adjacent their inner ends to provide integral hinges between the arms and accommodate opening thereof to extend about the center post of the agitator. The block is of sufficient height and the arms are of sufficient length to fit between the inner rim of the casing, spin basket and center post of the agitator. The outer end portions of the arms taper inwardly toward their lower ends, and the inner end portions of the arms are recessed along generally uniform arcs to fit around the center post of the agitator when the arms are opened relative to each other.

3,809,233

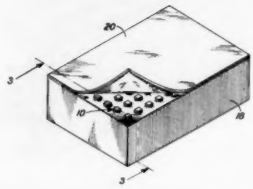
METHOD OF AND PACKAGE FOR TRANSPORTING ARTICLES

Raymond Frank Gruszka, Reading, Pa., assignor to Western Electric Company Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 112,263, Feb. 3, 1971, abandoned. This application July 14, 1972, Ser. No. 271,882

Int. Cl. B65d *73/02*; **B65b** *15/02*; **H01f** *7/20*

U.S. Cl. 206—328 **20 Claims**



Integrated circuits are arrayed on a carrier of permanently magnetized material, such as barium ferrite. The circuits may be plated with a layer of magnetic material. A thin foil cover of magnetic soft material is placed over the array of circuits to hold the circuits in the array and enclose them. Where the circuits are to be transported through fluids, the cover is made porous to admit the fluids. A convenient protective package is thereby provided for transporting the integrated circuits.

3,809,234

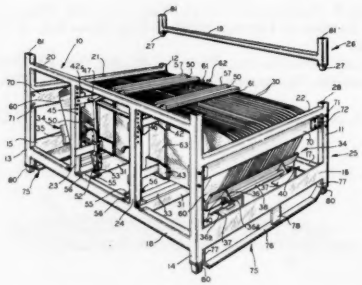
GLASS SHIPPING RACK

James F. Kurick, Perrysburg, Ohio, assignor to Libby-Owens-Ford Company, Toledo, Ohio

Continuation of Ser. No. 126,424, March 22, 1971, abandoned. This application Dec. 20, 1972, Ser. No. 316,781

Int. Cl. B65d *81/02, 85/48, 85/54*

U.S. Cl. 206—448 **18 Claims**

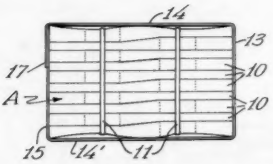


A rack for shipping and storing a plurality of individual sheets of glass or the like, and particularly curved automotive glass units. The rack includes resilient brace members which can be adjusted both vertically and horizontally so as to accommodate units of various sizes supported upon edge. The resilient braces and support members have multiplanar surfaces for engaging the units whereby the rack will accommodate a variety of units with different curvatures, dimensions and outlines. Adjustable straps secured to the rack frame at their opposite ends support the top edges of the individual units.

3,809,235
BAG BALE

John W. Edwards, Richmond, and Herbert G. Tull, III, Charlottesville, both of Va., assignors to Hoerner Waldorf Corporation, St. Paul, Minn.

Continuation-in-part of Ser. No. 120,543, March 3, 1971, abandoned. This application Jan. 3, 1972, Ser. No. 214,670
Int. Cl. B65d 71/00
U.S. Cl. 206—499 **5 Claims**

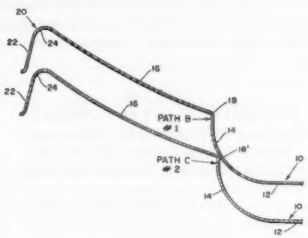


A bale of bags is provided which is strapped about the thickest areas of the bag bottoms. A sleeve of paper is wrapped about the bale at right angles to the direction of the straps.

3,809,236
DISPOSABLE PLASTIC DISH

Paul Davis, Swampscott, and David N. Shore, Brookline, both of Mass., assignors to Sweetheart Plastics, Inc., Wilmington, Mass.

Filed July 3, 1972, Ser. No. 268,484
Int. Cl. D21j 7/00
U.S. Cl. 206—519 **7 Claims**



A pair of nestable containers each having bottom and side walls, and a nesting shoulder formed in one of the walls. The shoulder of each container is composed of alternate side and corner segments. The corner segments of one container lie radially beyond the corresponding segments of the other container, while the side segments of the one container lie radially within the side segments of the other container. Therefore, when the two containers are nested together, certain segments of the upper container overlap the corresponding segments of the lower container to prevent jamming.

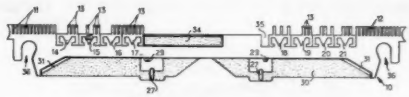
3,809,237
DEVICE FOR THE SELECTION OF DOCUMENTS SUCH AS, FOR INSTANCE, INDEX CARDS

Michel Gerard Schimmerling, 30 Rue de la Libert, Lingolsheim, France (67380)

Filed May 9, 1973, Ser. No. 358,539
Claims priority, application France, May 10, 1972, 72.17526
Int. Cl. B07c
U.S. Cl. 209—80.5 **13 Claims**

The invention relates to a device for the selection of documents filed in a filing cabinet and comprising a selecting carriage which can be displaced above the documents.

According to the invention the documents are suspended to support straps of breakable plastics material provided at their upper portion with selecting tabs some of which being in-



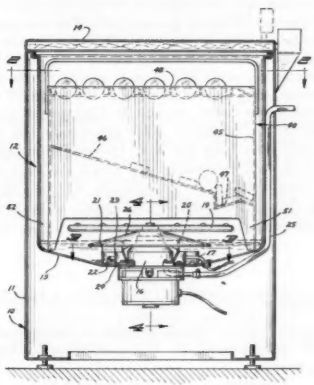
terchangeably mounted on said support straps without protruding on the two faces of said support straps.

The invention particularly applies to the selection of cards.

3,809,238
LENS PROCESSING APPARATUS

Jack L. Reisman, 4713 E. Coventry Rd., Minnetonka, Minn.

Filed Mar. 15, 1972, Ser. No. 234,902
Int. Cl. B07b 13/04
U.S. Cl. 209—83 **3 Claims**



Lens processing apparatus operable to remove lens blocks from a plurality of lenses and to completely clean the lens after dissolving the adhesive bond.

A tub enclosure is adapted to receive one or more racks having notched lens engaging portions and an inclined block receiving portion.

The tray is placed in the tub and sealed therein. The tub includes a heating element and a pump and spray arrangement for impelling a heated cleansing solution upwardly on the lens blanks and blocks.

The adhesive, which may preferably be of low melting point metal, is dissolved and the blocks are released from the lenses to fall down onto the inclined bottom of the rack. The blocks roll to the lowermost portion thereof to a location that is out of the spray pattern.

The solution may then be continuously applied to the lenses at the top of the tray to continue the cleaning cycle.

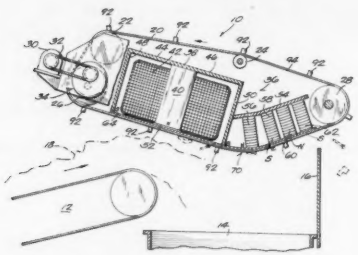
The metal adhesive falls to the bottom of the tub into a sump configured to collect the liquid metal. A heated trap serves to allow the metal to flow exteriorly of the tub to be collected for reuse.

3,809,239

MAGNETIC REFUSE SEPARATOR

William T. Barrett, and Newton I. Potter, both of Waukesha, Wis., assignors to Wehr Corporation, Milwaukee, Wis.

Filed Dec. 26, 1972, Ser. No. 318,622
Int. Cl. B07c 5/344
U.S. Cl. 209—111.8 12 Claims



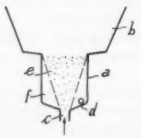
A magnetic separator is located at the discharge end of a refuse conveyor. The separator includes a continuous belt revolving in a closed path and having a curve in its path other than at its head or end pulley. A magnetic assembly generates a magnetic field at the belt curve and on both the upstream and downstream as sides thereof. The refuse conveyor runs at an angle toward and discharges its burden into the belt in the upstream portion of the magnetic field. Magnetic material in the burden is attracted to the belt and non-magnetic material falls away. The magnetic material travels with the belt around the curve causing some agitation to dislodge any non-magnetic material being carried along with the magnetic material. Downstream of the curve, the belt, and the magnetic material, move out of the magnetic field whereupon the magnetic material falls away from the belt. The magnetic separator is supported above a receptacle into which the thus separated magnetic and non-magnetic materials fall into segregated areas. The separator's position is adjustable horizontally to accommodate different levels of burden on the refuse conveyor.

3,809,240

METHOD OF INJECTING FLUIDS INTO A FLOTATION TANK

Vincent Savall, Velizy, France, assignor to Degremont, Societe Generale D'Epuration & D'Assainissement, Rueil Malmaison, France

Filed Dec. 6, 1971, Ser. No. 205,140
Int. Cl. B01d 21/00
U.S. Cl. 210—44 5 Claims



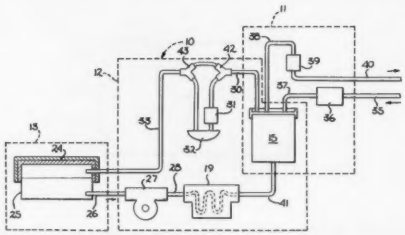
Method of injecting fluids into a flotation tank in which the flotation process is carried out by expanding, within the liquid mass to be treated, which contains particles in suspension, another liquid saturated with a gas under pressure. This method consisting in introducing the liquid saturated with gas under pressure into an enclosure preferably of circular horizontal cross section, to which the liquid to be treated is supplied through the bottom, and causing a stepped expansion of the liquid saturated with gas under pressure before introducing it into the enclosure.

3,809,241

SELF-CONTAINER KIDNEY DIALYSIS APPARATUS

Charles E. Alvine, Palos Verdes Peninsula, Calif., assignor to Electro Systems Engineering, Inc., Palos Verdes Peninsula, Calif.

Filed Feb. 23, 1973, Ser. No. 335,006
Int. Cl. B01d 13/00
U.S. Cl. 210—87 16 Claims



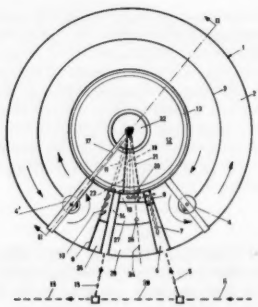
An improved kidney dialyzer. An improvement to kidney dialysis machines which provides for the portability of the apparatus. The improvement comprises a portable dialysate delivery system comprising a pump assembly flow section. The pump assembly flow section is made up of the artificial kidney, a heat reclaiming element and a recirculation pump for the dialysate passing therethrough. The pump assembly flow section is adapted to be connected to either a single pass dialysate proportioning system or a bath dialyzer reservoir cell. The pump used for recirculation of the dialysate solution is the source for the heat reclamation element, the recirculation pump being coupled to a clutch assembly used to control operation of a blood pump in the blood circulation system. The present invention is adapted to operate on any input voltage pursuant to a self-contained power transmission source.

3,809,242

PURIFYING PLANT FOR SEWAGE

Jan Bosje, De Goorn 30, Oosterwolde, Netherlands

Filed July 25, 1972, Ser. No. 274,961
Claims priority, application Netherlands, Aug. 20, 1971, 7111546
Int. Cl. C02c 1/10
U.S. Cl. 210—195 3 Claims



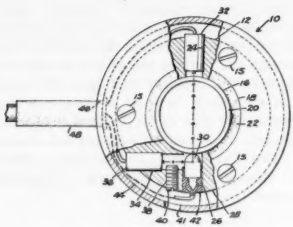
A purifying plant for sewage according to the active sludge method comprising an open tank provided with a partition and having the shape of a closed aerating circuit with a supply conduit, a discharge conduit and at least one surface aerator, said aerating circuit having a curved shape such that it substantially encloses a space in which at least one after-settling tank and at least one thickening pond are provided.

3,809,243

TURBIDITY MONITOR FOR DIALYSIS MACHINES

Philip J. Teders, Ann Arbor, Mich., assignor to Sarns, Inc., Ann Arbor, Mich.

Filed Jan. 26, 1972, Ser. No. 220,836
Int. Cl. B01d *31/00*
U.S. Cl. 210—96 **2 Claims**



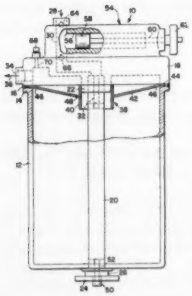
An improved turbidity monitor for a dialysis machine. The amount of turbidity, or impurity, of dialytic fluid is continuously monitored by a measuring photocell which receives light transmitted from a lamp through a conduit which carries the dialytic fluid. As the fluid turbidity changes, the amount of light received by the photocell also changes. The photocell correspondingly generates an electric signal measurement of fluid turbidity. Light is also shone onto a reference photocell to develop a reference signal which compensates for variations in the output of the measuring photocell caused by aging thereof. As the two photocells age, their operating characteristics change in substantially the same fashion. The two photocells are connected in circuit such that error in the turbidity signal due to aging of the measuring photocell is offset by change in the reference signal due to aging of the reference photocell. The monitor therefore maintains accuracy for an extended period of time. An alarm may be used to indicate when the fluid turbidity exceeds a predetermined level.

3,809,244

FUEL SEDIMENT BOWL ASSEMBLY

James Edward Jackson, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Dec. 14, 1972, Ser. No. 315,147
Int. Cl. B01d
U.S. Cl. 210—136 **10 Claims**



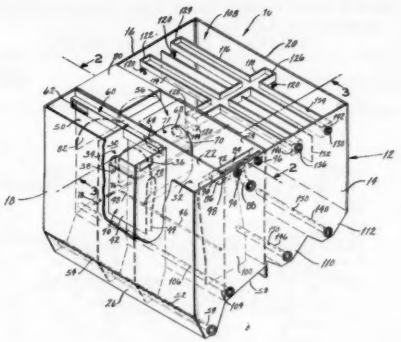
A fuel sediment bowl assembly is located in a fuel line between a source of fuel and a fuel pump. A hand pump is formed integrally with the sediment bowl and cooperates with appropriate valving for pumping fuel into the sediment bowl when separated water in the sediment bowl is being drained therefrom, the action of the pump effecting the replacement of the volume formerly occupied by the water by fuel such that no air will be introduced into the system. The sediment bowl assembly further includes a baffle at the top thereof which is constructed so as to aid in the separation of water from the fuel being drawn through the sediment bowl by the fuel pump.

3,809,245

SEWAGE TREATMENT APPARATUS

Sterling R. Kennedy, 3460 Hollenberg Dr., Bridgeton, Mo.

Filed Jan. 31, 1972, Ser. No. 222,229
Int. Cl. B01d *21/00*
U.S. Cl. 210—207 **16 Claims**



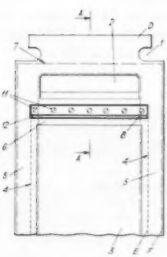
A sewage treatment apparatus having an aeration circulation system for separating sludge from sewage wherein sewage is circulated around an outlet port shielded by a circulation guide member. The circulating sewage causes solid matter contained therein to move radially away from the outlet port so that liquid entering the outlet port is substantially free of solids.

3,809,246

FLUID SEPARATION APPARATUS AND MEMBRANE SUPPORT FRAMES THEREFOR

Gilbert Niogret, Lyon, France, assignor to Rhone-Poulenc S. A., Paris, France

Filed Dec. 15, 1972, Ser. No. 315,457
Claims priority, application France, Dec. 15, 1971, 71.45076
Int. Cl. B01d *25/26*
U.S. Cl. 210—232 **13 Claims**



Fluid separating apparatus and a support frame for placing between the membranes thereof, in which the frame comprises a generally rectangular plate, having two faces and two

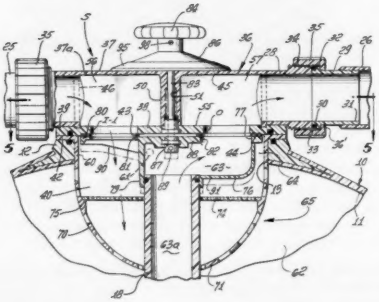
ends, at least one cell forming recess formed in each face, at least one orifice extending through the thickness of the plate adjacent the ends of the plate for the passage of fluid to be treated, a duct for the removal of fluid, which is passed through the membrane supported by the plate over each of said cells forming recesses, an aperture passing through the plate and positioned between at least one of the orifices and the cell forming recess, said aperture having a rules surface along the edge thereof adjacent said cell forming recess, and a detachable clamp located wholly within said aperture to clamp membranes disposed on each of said faces in a fluid-tight manner against said rules surface of said plate.

3,809,247

HIGH THROUGHPUT FILTER HAVING MULTIPOSITION VALVE

James E. Brett, Redondo Beach, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.

Filed Nov. 9, 1972, Ser. No. 305,172
Int. Cl. B01d *23/24*
U.S. Cl. 210—278 **16 Claims**



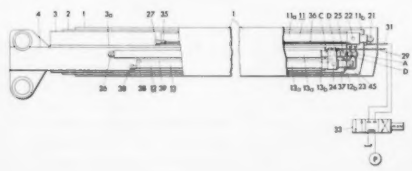
Filter for swimming pool water in which multiple operational modes including filtration, backwash and rinse modes are achieved with a valve structure affording positive sealing during operation, positive locking into mode, and adjustment between modes without frictionally wearing critical seals in the valve. The filter valve structure further employs large ports and direct flow passages to provide low pressure drop, even at very high flow rates through the filter, and a novel water distributor to avoid turbulence and undue disruption of the filter medium during filtration.

3,809,248

BOOM EXTENSION MEANS

Kazuhiro Ohniwa, and Seuti Ishikawa, both of Takamutsu, Japan, assignors to Kabushiki Kaisha Tadano Tekkosho, Takamatsu City, Japan

Continuation of Ser. No. 11,131, Feb. 13, 1970, abandoned.
This application Jan. 18, 1972, Ser. No. 218,822
Int. Cl. F15b *15/16*
U.S. Cl. 212—55 **5 Claims**



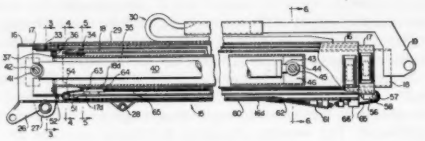
In a boom consisting of more than three boom members telescopically extensibly connected with each other and including a plurality of hydraulic cylinders each having compressed oil chambers on the extending and retracting sides thereof and arranged to extend between adjacent boom members, a boom extension means comprising oil supply and discharge lines connected to an oil pressure source; oil pressure supply and discharge lines connecting said plurality of hydraulic cylinders with each other; a plurality of control valve means each connected to each of the secondly mentioned oil pressure supply and discharge lines which are connected between adjacent hydraulic cylinders, each of said control valve means being so adapted as to be normally maintained in a closed position to permit the flow of oil pressure in the same direction and forcibly biased into an opened position only when the hydraulic cylinder relating to said control valve is operated to an utmost limit of extension or retraction, thereby permitting the flow of oil pressure in a direction opposite to said same direction, the opening and closing operations of said control valve being automatically effected in association with movement of the hydraulic cylinder relating to said control valve.

3,809,249

TELESCOPIC CRANE BOOM WITH CHAIN ACTUATION OF FLY SECTION

John L. Grove, Greencastle, Pa., assignor to Fulton Industries, Inc., McConnellsburg, Pa.

Filed Mar. 15, 1972, Ser. No. 234,937
Int. Cl. B66c *23/06*
U.S. Cl. 212—55 **2 Claims**



A telescopic crane boom having a base section, a mid section telescopically received in the base section and a fly section telescopically received in the mid section, a hydraulic cylinder for moving the mid section relative to the base section and chains connected to the base and fly section for extending and retracting the fly section upon actuation of the hydraulic cylinder to extend and retract the mid section. The chains are trained on front and rear sprockets supported by the mid section; the axes of the sprockets are below the bottom of the mid section, the chains are anchored to the bottom of the base section and one chain passes rearwardly through an aperture rearwardly of the anchor. Plural front and plural rear sockets are provided, with a chain for each.

3,809,250

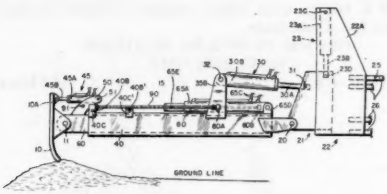
TELESCOPIC APPARATUS

John S. Pilch, Ware, Mass., assignor to Ware Machine Works, Inc., Ware, Mass.

Filed Apr. 16, 1973, Ser. No. 351,284
Int. Cl. B66c *23/06*
U.S. Cl. 212—55 **17 Claims**

Telescopic apparatus adapted for use with graders, trenchers or backhoes, loaders, lifters and the like which include an earth moving implement, dipperstick, hook or other tool, attachment or the like. The apparatus includes a first support which is adapted to be supported in relation to the ground. The boom includes a first longitudinally extending part which is pivotally associated with the first support for substantially vertical swinging movement relative thereto and a second longitudinally extending part which is slidable relative to the first part. It also includes longitudinally reciprocable means, such as an hydraulic cylinder and ram, and means for connecting one end thereof to the first part. A first arcuate

member, such as a sheave or sprocket is rotatably mounted on the other end of the longitudinally reciprocable means substantially in alignment with its longitudinal centerline and a second arcuate member is rotatably mounted on said first longitudinally reciprocating means in spaced longitudinal relationship from said first arcuate member and from said first longitudinally reciprocable means and substantially in alignment with the longitudinal centerline thereof. First elongate flexible means, such as a chain or cable, is passed over the first arcuate member, one end thereof is connected to the first part and the other end is connected to the second part adjacent to its inner end. Second elongate flexible means is passed over the second arcuate member, one end thereof is connected to



the first part and the other end thereof is connected to the second part at a locality towards the outer end thereof. A device or tool of the type described above is associated with the outer end of the second part. The second part and the attached device or tool are moved longitudinally relative to the first part upon actuation of the longitudinally reciprocable means, thereby facilitating the grading, digging, loading and/or lifting with the device.

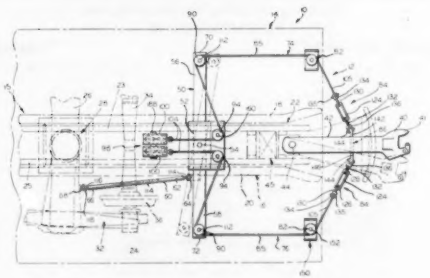
According to a preferred embodiment, the apparatus also includes another longitudinally reciprocable means for swinging the first part substantially vertically relative to the ground, one end of this means being pivotally connected to the first support and the other end being pivotally connected to the first part.

3,809,251

COUPLER POSITIONING DEVICE FOR SLIDING SILL CUSHION UNDERFRAME CARS

Osvaldo F. Chierici, Elmhurst, and Frederick P. Winters, Lombard, both of Ill., assignors to Holland Company, Lombardi, Ill.

Filed Feb. 28, 1973, Ser. No. 336,638
Int. Cl. B61g *7/12*
U.S. Cl. 213—15 **8 Claims**



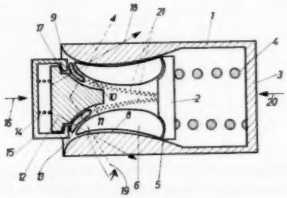
A railroad car coupler positioning device of the general type disclosed in Chierici U.S. Pat. No. 3,642,149 that is arranged specifically for use in connection with sliding sill cushion underframe cars, in which the coupler is connected to either end of a command or swing lever by an essentially uncushioned cable connection, with the connecting cables being trained over sheaves at the respective ends of the swing lever for connection to a shock absorbing device carried by the sliding sill that is independent of the primary sliding sill cushioning device. The cables are tensioned against the action of the shock absorber to provide the desired flexion free linkage between the swing lever and the coupler for coupler positioning purposes, and while buff and draft movement of the sill relative to the underframe results in automatic slack take up and slack let out in the cables without effecting their tension, the shock absorbing device acts to cushion the cables against the action of buff and draft movement of the coupler relative to the sill.

3,809,252

SPRING ELEMENT PARTICULARLY ADAPTED FOR AUTOMATIC CENTER HEAD COUPLERS OF RAILROAD VEHICLES

Axel Schelle, Rottach-Scherfen, Germany, assignor to Knorr-Bremse KG, Berlin and Munich, Germany

Filed Aug. 22, 1972, Ser. No. 282,668
Claims priority, application Germany, Aug. 31, 1971, 2143565
Int. Cl. B61g *9/18, 11/14*
U.S. Cl. 213—24 **6 Claims**



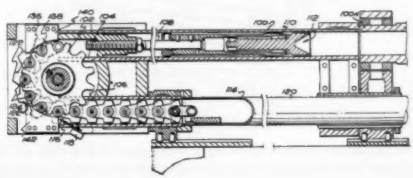
A spring element has a thrust member insertable into a sleeve against spring and friction forces. The thrust member is coupled by force transmitting wedge means to a friction element which is carried along by insertion of the thrust member and moves against a friction surface on the inner face of the sleeve. The force transmitting wedge means comprises cooperating curved wedge surfaces extending in the direction of insertion and an intermediate element is disposed between the wedge surfaces. Regulator means are provided which are responsive to the magnitude of shock loads acting on the spring element to position the intermediate element with respect to the wedge surfaces.

3,809,253

BAR FEED MECHANISM

Austin Cartwright Mercer, Jr., Guiseley, England, assignor to Mercer Pneumatic Tools Limited, Yorkshire, England

Filed Aug. 2, 1972, Ser. No. 277,468
Claims priority, application Great Britain, June 16, 1972, 36471/72
Int. Cl. B23q *5/00*
U.S. Cl. 214—1.5 **8 Claims**



A bar feed mechanism for a machine tool comprising a feed tube and a length of link chain which is adapted to the bore

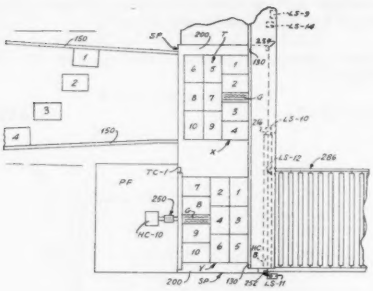
section of the tube such that the chain can be fed into the tube and once in the tube the chain is constrained by the tube whereby relative pivotings of the links is prevented and in effect the length of chain in the feed tube becomes a rigid rod usable for pushing the bar stock along the tube, and including feed means for feeding the chain into the tube at the end remote from which the bar stock is fed to the machine tool.

3,809,254

CASE PALLETIZER

John M. Leach, P.O. Box 341, Port Jefferson, N.Y.

Division of Ser. No. 34,201, May 4, 1970, Pat. No. 3,627,103.
This application Sept. 9, 1971, Ser. No. 179,091
Int. Cl. B65g *57/22*
U.S. Cl. 214—6 P **1 Claim**



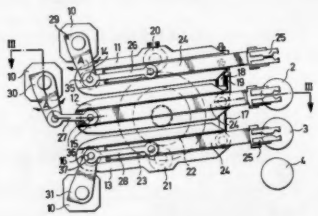
A palletizing machine which is particularly applicable to high speed loading of cases in tiers on pallets or other type of support in that every case received at th tiering operation and which requires repositioning is contacted by a case orienter and conducted to a scheduled relative position to ultimately form the desired tier or layer pattern without stopping forward motion of any case at any time. In addition the tiers so formed are alternately stacked onto two pallets or other supports without any lost time motions or movements.

3,809,255

WORKPIECE CONVEYOR FOR MULTISTAGE PRESS

Friedrich-Karl Koch, Krefeld, and Oskar Rahn, Hubert, both of Germany, assignors to Peltzer & Ehlers, Krefeld, Germany

Filed Sept. 8, 1972, Ser. No. 287,521
Claims priority, application Germany, Sept. 29, 1971, 2148529
Int. Cl. B23q *7/04*
U.S. Cl. 214—1 BD **6 Claims**



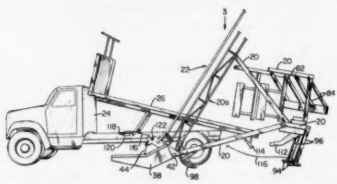
A conveyor for transporting a workpiece from one die to another in a multistage press, so that successive pressing operations can be performed on the workpiece. Parallel carrier arms corresponding in number to the number of dies, are pivotally supported at one end, and the other end swings between a first position adjacent one die, and a second position adjacent the next successive die. The free ends of the carrier arms are tied together by spring-loaded, extensible link means, so that they swing as one. A rotating double cam acts on diametrically opposite cam followers on two carrier arms, causing the arms to oscillate between the first and second positions. Each carrier arm has a support rail slidably mounted thereon, with gripper jaws at one end to grip the workpiece. A connecting rod joins the other end of each support rail to a cam-actuated lever arm, and when the support rail is at one extreme position, the pivot center between the connecting rod and lever arm coincides with the pivot axis of the carrier arm.

3,809,256

BALE LOADER

Richard B. Miskin, Ucon, Idaho, assignor to Miskin Scraper Works, Inc., Ucon, Idaho

Filed Mar. 10, 1972, Ser. No. 233,430
Int. Cl. B65g *57/32*
U.S. Cl. 214—6 B **16 Claims**



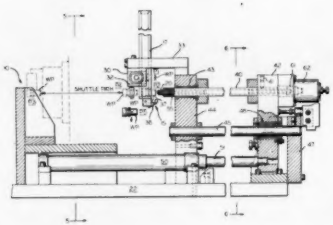
Bale loader, for use with a truck having a horizontal bed adapted to be tilted to vertical position for depositing its bale load on the ground, characterized by means for attaching the loader to the truck to be bodily carried thereby during use, means for picking up spaced bales lying on the ground as the truck moves along a field and conveying same to a bale assembly station disposed adjacent the rear end of the bed wherein a bale wall is assembled, and means for sequentially pushing the bale walls toward the front end of the bed until the entire length of the bed is filled with bale walls, after which the loader may be detached from the truck, whereby the truck may proceed to an unloading locus without being encumbered by the loader. Since all loading operation are preferably under automatic powered control, the entire loading operation is effected by only a truck driver by guiding the truck along a desired course in the field.

3,809,257

MACHINE TOOL FEED APPARATUS

Adolph V. Klancnik, 1020 Glenview Rd., Glenview, Ill.

Filed Aug. 6, 1971, Ser. No. 169,738
Int. Cl. B65g *59/06*
U.S. Cl. 214—8.5 C **7 Claims**



Work piece transfer apparatus includes a shuttle device which clamps and moves a work piece from a loading station to a work station where the work piece is to be machined, and returns to the loading station. During return movement, the force of the clamp is released and the machined work piece is

stripped from the clamp so that the shuttle device returned to the loading station may be reloaded and recycled.

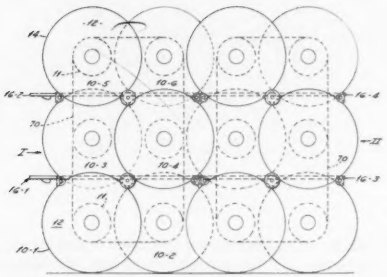
Preferably, the clamp is a collet actuated by an air-operated draw bar, and is supported by a reciprocal shuttle in the form of a mandrel which houses the draw bar. The mandrel and draw bar are operated by independent cylinders.

3,809,258

RACK FOR SHIPPING AND STORING TEXTILE BEAMS

William B. Shepherd, Winston-Salem, N.C., assignor to Hayes-Albion Corporation, Charlotte, N.C.

Filed Aug. 2, 1972, Ser. No. 277,169
Int. Cl. B65g *1/14*
U.S. Cl. 214—10.5 R **14 Claims**



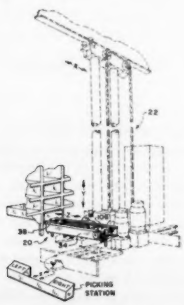
A rack construction for shipping and storing groups of empty textile beams in nested and tiered relation comprises a framework of side members and cross members connected thereto. Spacers secured to each of the cross members in pairs form a cradle engageable from below by the heads of a pair of beams of a lower tier and from above by the heads of a pair of beams of a second tier, the spacers defining a minimum separation between the barrels and heads of nested beams in the same tier and in adjacent tiers. The number of beams in a group can be expanded by the use of another rack for each additional tier. Bands applied around the barrels of the beams of the group retain the beams in engagement with the spacers and enable the group to be handled as a unit; and, the rack or racks of one group can be interlocked with those of another group.

3,809,259

HANDLE ENGAGING TOTE PAN RETRACTOR

George R. Pipes, Salt Lake City, Utah, assignor to Kenway Engineering, Incorporated, Bountiful, Utah

Filed Feb. 26, 1973, Ser. No. 336,109
Int. Cl. B65g *1/06*
U.S. Cl. 214—164 A **4 Claims**



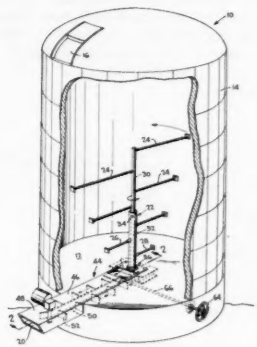
An automated handle-engaging tote pan retractor and method for use with computer controlled warehousing stacker systems, the retractor comprising a support frame, an elevated platform which carries a retrieved tote pan from storage to a picking station, stop mechanisms which hold the retrieved tote pan on the retractor as it moves between storage and the picking station, and two tote pan handle-engaging mechanisms which pull a desired tote pan from a predetermined storage bin location on either side of a storage aisle onto the elevated platform and later push the retrieved tote pan in either direction onto a picking platform at a picking station.

3,809,260

BOTTOM UNLOADER APPARATUS FOR SILOS

Harold M. Zimmerman, R.D. 1, Ephrata, Pa.

Filed Nov. 6, 1972, Ser. No. 303,717
Int. Cl. B65g *65/48*
U.S. Cl. 214—17 D **5 Claims**



A novel bottom unloader apparatus is disclosed for use in a silo of the type having a floor and upstanding sides. The unloader apparatus comprises an elongated shaft having a plurality of chain agitator devices thereon, the shaft being rotationally journalled within the silo about a substantially vertical axis, such that the shaft extends upwardly from the silo floor. At a lower end portion of the shaft, a drive gear means or sprocket is affixed thereto. A substantially laterally disposed conveyor mechanism extends between the shaft and a discharge outlet exterior of the silo, the conveyor mechanism in the preferred inventive embodiment being disposed in the silo floor and including an endless chain having a plurality of vanes thereon, the endless chain being disposed about the drive gear means or sprocket of the elongated shaft. A single drive means is provided to the outside of the silo and is coupled to the endless chain to advance same, selectively in a forward or reverse direction, so as to discharge silage, advancement of the endless chain simultaneously effecting rotation of the shaft so as to agitate silage downwardly toward the conveyor mechanism.

3,809,261

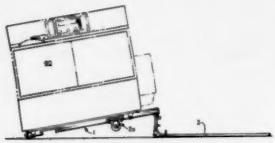
MOVING SYSTEM

William S. Lee, New Orleans, La.

Division of Ser. No. 9,223, Feb. 6, 1970, Pat. No. 3,633,774.
This application Oct. 14, 1971, Ser. No. 189,337
Int. Cl. B65g *67/02*
U.S. Cl. 214—38 CC **19 Claims**

A heavy duty moving system including a sled, two sets of removable heavy duty caster wheels (FIG. 1) and a lever arm assembly (FIG. 1A) for moving heavy equipment, for example, the "XEROX" copy machines of the 2400 series. The sled is slid under the machine (FIG. 3) and then raised at one end

by the lever assembly (FIG. 4), one set of caster wheels then being laterally inserted and locked into the sled (FIG. 5). The



opposite end of the sled is raised and the second set of caster wheels inserted and locked into the sled (FIG. 6). Upon lowering, the equipment is then ready for transportation (FIG. 7).

3,809,262

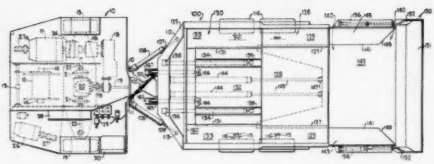
SELF-PROPELLED HAULAGE VEHICLE

Alex J. Galis, Apt. 101 Heatherbrae Square, Indiana, Pa.

Division of Ser. No. 189,512, Oct. 15, 1971. This application Sept. 27, 1972, Ser. No. 292,514

Int. Cl. B60p *1/00*

U.S. Cl. 214—152 **8 Claims**



An improved, self-propelled haulage vehicle, for hauling loose mined material, such as coal, in an underground mine or the like. The haulage vehicle comprises prime mover means operably connected to a trailer having a material haulage compartment that includes a fixed, or stationary, hopper portion having mounted therewith one or more selectively movable hopper portions whereby the effective length, and hence hauling capacity, of the haulage vehicle may be varied, and whereby rapid loading and unloading of the vehicle is obtained. In one embodiment, the trailer means includes a fixed hopper portion having mounted thereon front and rear movable hopper portions which may be selectively positioned during loading and unloading of the haulage vehicle. Each of the hopper portions is channel-shaped and includes spaced-apart vertical sidewalls transversely interconnected by a bottom plate portion. The movable front hopper includes pivotally mounted at the end thereof a loading and holding gate means adapted to pivot to an open position during vehicle loading or unloading and to a closed position during loaded vehicle travel. Further provided is a cleaner plate within the trailer means adapted to travel the length of the fixed hopper portion whereby the hopper contents may be dumped, or discharged therefrom.

3,809,263

CONTINUOUSLY MOVABLE INFORMATION STORAGE AND RETRIEVAL SYSTEM

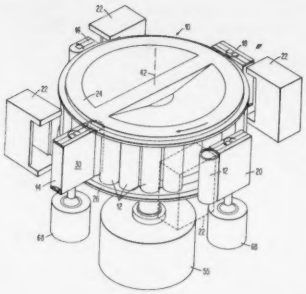
Paul D. Dodd, Boulder, Colo.; John J. Lynott, Los Gatos, and John D. Treder, Santa Clara, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 29, 1973, Ser. No. 364,854

Int. Cl. B65g *1/06*

U.S. Cl. 214—16.4 R **13 Claims**

A continuously moving information-bearing article carrier and a selectively actuated article handler are in peripheral velocity synchronism for exchanging information-bearing articles. Such dynamic article exchange occurs without stopping or altering the velocity of the carrier. In a preferred form, the carrier is a rotating cylinder having a large plurality of information-bearing articles spaced about its periphery and extending outwardly of the outer periphery for facilitating dynamic article exchanges. Tiers of such rotating cylinders may be axially aligned with a plurality of article handlers for each of the rotating cylinders; or one or more of the article handlers can



move axially of the assembly for selectively accessing any one of the cylinders. In a data staging environment, a small plurality of such cylinders may have a plurality of spaced-apart accessing mechanisms for reducing total access time to any article in such rotating cylinder. Additionally, other cylinders may be selectively accessed by a traveling access mechanism which selectively transfers an article from one of the other rotating cylinders to the staging rotating cylinder. Several embodiments of the invention are described.

3,809,264

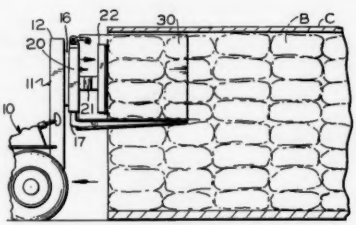
METHOD OF LOADING CARGO CONTAINERS

Gerald K. Mayers, Portland, Oreg., assignor to Container Bins, Inc., Portland, Oreg.

Filed May 17, 1972, Ser. No. 254,227

Int. Cl. B65g *57/02*

U.S. Cl. 214—302 **1 Claim**



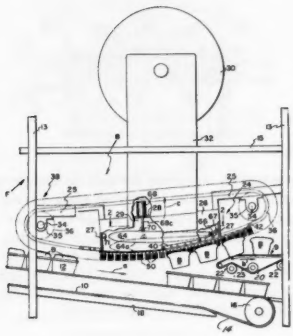
Shipping containers are loaded with cargo, such as bags of seed, by placing the bags in a generally U-shaped bin having a width substantially equal to that of the open loading end of the cargo container and a height substantially equal to a whole number fraction of the height of such open end. The bags are loaded fully across the width of the bin and substantially evenly with the top thereof, whereupon the loaded bin is inserted into the container through the open end and the cargo elements are pushed out en masse as the bin is simultaneously withdrawn. A second batch of cargo is similarly loaded, being placed above and in contact with the top of the first batch, thereby to load a widthwise row of cargo elements fully to the top of the container and completely across the width thereof.

3,809,265

BAKERY PRODUCT DEPANNING APPARATUS

Norman O. Krenke, Saginaw, and De Witt Sims, Burt, both of Mich., assignors to Baker Perkins Inc., Saginaw, Mich.

Filed Dec. 13, 1971, Ser. No. 207,137
Int. Cl. A21b 3/18
U.S. Cl. 214—309 26 Claims



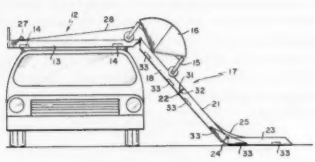
Depanning apparatus for removing bakery products, such as bread loaves, from pans on a product-supplying conveyor and transferring them to a discharge conveyor comprising: a vacuum box having an opening in the bottom thereof; a perforated endless transfer conveyor including a lower run covering the opening in the box; a plurality of dependent resilient cups mounted on the transfer conveyor and including passages communicating with the perforations in the endless transfer conveyor; and vacuum responsive valve members mounted in the cups for movement to and from operative positions blocking the passages when the resilient cups are not sealed to a product and a predetermined vacuum exists in the box. An assembly is also provided in the box for selectively preventing communication of the vacuum source with the cups over a predetermined area of the traveling conveyor.

3,809,266

CARGO LOADING AND CARRYING DEVICE

Paul L. Salerni, c/o Dr. M. E. McCormick, U.S. Naval Academy, Annapolis, Md.

Filed July 25, 1972, Ser. No. 274,906
Int. Cl. B60r 9/00
U.S. Cl. 214—450 2 Claims



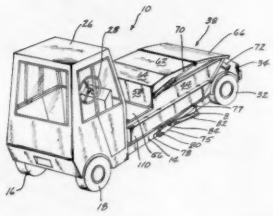
A load carrying device for a vehicle top mounting having a folding track and a load carrying dolly riding on the track. The track is long enough to reach from the vehicle top to the point of delivery or pick-up of the load. A winch is provided to raise or lower the load.

3,809,267

REFUSE COLLECTING AND DISPENSING VEHICLE

John W. Knight, New Hampton, Iowa, assignor to Knight Motor Corporation, Osage, Iowa

Filed June 29, 1972, Ser. No. 267,603
Int. Cl. B65f 3/00
U.S. Cl. 214—508 7 Claims



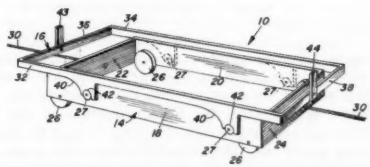
A refuse collecting and dispensing vehicle including a powered wheeled frame means having a refuse collection box pivotally mounted thereon. A hydraulic cylinder means is pivotally connected to the box through a pivoted arm arrangement to pivot the box from a normal collection position to a dispensing position. The box has a collection opening formed in the rearward end thereof to permit refuse to be placed in the interior of the box. A vertically disposed packing plate is movably mounted in the box below the collection opening for moving the collected refuse from the area of the collection opening into the interior of the box. The packing plate also serves to aid in forcing the refuse outwardly from the box when the box is being dumped. A safety switch means is provided in the collection opening for deactivating the hydraulic cylinder means connected to the packing plate to prevent injury to the operator's hand or arm. The box has a discharge opening formed at one end thereof which is closed by a cover element slidably mounted on the upper end of the box. The upper end of the box has a curved configuration to permit the box to be received in the collection opening of a larger refuse truck or the like. The vehicle also includes an operator's cab which is mounted on the rearward end of the frame means behind the collection box.

3,809,268

LOAD-TRANSFER DEVICE

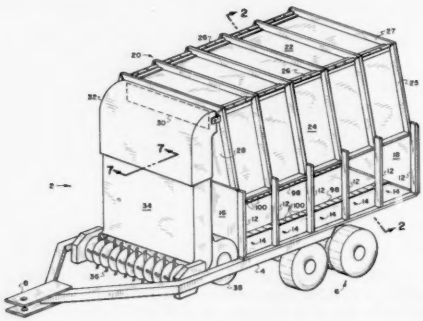
David Edward Lutz, 330 Washington Ln., Carlisle, Pa.

Filed Aug. 30, 1972, Ser. No. 284,823
Int. Cl. B60p 1/00
U.S. Cl. 214—512 16 Claims



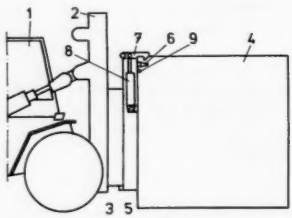
A load-transfer device primarily useful in loading and unloading trucks or the like comprising a conveyor operating on a principle similar to a walking beam conveyor wherein a load-bearing member is raised vertically to lift a load from a supporting surface and then to transfer the load to another point on the surface. The load-bearing member is raised and lowered by reaction with adjacent loads or an immovable bulwark.

3,809,269
SIDE PRESS HAY WAGON
Ezra Cordell Lundahl, Idaho Falls, Idaho, assignor to Ezra C. Lundahl, Inc., Logan, Utah
Filed Mar. 9, 1972, Ser. No. 233,167
Int. Cl. A01d 85/00
U.S. Cl. 214—519 14 Claims



A hay wagon comprising a bed, pick up and haying displacing mechanisms for delivering loose hay from the ground onto said bed in stacked relation, a pressing mechanism for principally compacting side edges of the hay stack and a stack discharging mechanism for unloading the compacted hay stack from the bed.

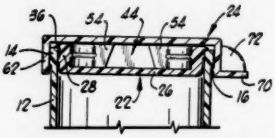
3,809,270
LATERAL CONTAINER GRABBER HAVING CARRYING PINS AT THE UPPER CORNERS OF THE CONTAINERS
Lahja Arvid Peltonen, Tampere, Finland, assignor to Valmet Oy, Helsinki, Finland
Filed May 24, 1972, Ser. No. 256,592
Int. Cl. B66f 9/18
U.S. Cl. 214—621 4 Claims



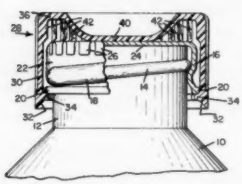
A lateral container grabber has at least two supporting pins for the container which are pushed from the side of the long vertical side of the container into the corner pieces. Power cylinders act between the frame structure of the lateral grabber and securing levers. A spring is used to move the securing levers into their closed position while power cylinders move the securing levers into their open position.

3,809,271
SAFETY CLOSURE FOR CONTAINERS
Ray D. Stroud, 2421 N.W. 59th St., Oklahoma City, Okla.
Filed June 29, 1972, Ser. No. 267,645
Int. Cl. A61j 1/00
U.S. Cl. 215—9 14 Claims

A safety closure for securement to containers and vials and adapted to prevent access to the contents of said containers and vials, the safety closure including an inner cap and an external lid both frictionally retainable on the open end of the container or vial. The inner cap includes a central plate having a peripheral wall around the outer periphery thereof adapted to frictionally engage the inside wall of the container or vial. A flange secured to the upper edge of the peripheral wall prevents the internal cap from moving downwardly into the container from the upper end thereof. The internal cap includes an interlock structure formed on the peripheral wall. The external cap includes a central plate having an annular flange projecting from the outer periphery of the central wall and dimensioned to frictionally engage the outer wall of the container or vial. The outer wall of the external lid includes an interlock structure adapted to mate with, and engage, the interlock structure of the internal cap to facilitate removal of the internal cap from the container or vial.



3,809,272
SAFETY BOTTLE CLOSURE
Eino J. Maki, Upper Saddle River, N.J., assignor to Sterling Drug Inc., New York, N.Y.
Filed Feb. 14, 1972, Ser. No. 225,752The portion of the term of this patent subsequent to Nov. 23, 1988, has been disclaimed.
Int. Cl. A61j 1/00; B65d 55/02
U.S. Cl. 215—9 6 Claims



A closure cap of the screw-on or similar type having exertior knurls or the like at the periphery thereof, in combination with a safety overcap having complementary interior knurls or projections for selective engagement with the exterior knurls of the closure cap for turning the latter by rotation of the overcap, said overcap including a yieldable resilient depressed base engaging the base of the closure cap normally maintaining the overcap unengaged with respect to the closure cap. The interior knurls or projections on the interior of the overcap engage the exterior knurls at the periphery of the closure cap only upon the application of downward pressure on the safety overcap relative to the closure cap, said overcap rising to non-engaged position upon release of the pressure.

3,809,273
SAFETY STOPPER
David Lehr, 79 Lloyd Rd., Montclair, N.J.
Filed May 25, 1972, Ser. No. 256,656
Int. Cl. B65d 39/04
U.S. Cl. 215—9 8 Claims

A safety closure having a soft resilient stopper portion adapted to be inserted into a bottle opening and resiliently engaging sealingly against the inner surface of the bottle open-

ing, which comprises a resilient bottom stopper part adapted to be inserted into the bottle and resiliently engaging the inner walls thereof. The resilient bottom stopper part has an upper part outside of the bottle. A rigid upper portion is connected to the upper part bottom stopper part and disposed outside of

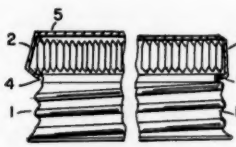
the bottle. A rigid stick member abuts the bottom stopper portion and extends through and is guided by the upper portion and terminates adjacent thereto in ends spaced apart slightly less than the average size of an adult's thumb, and at least one area on said upper portion is provided between said ends.

3,809,274

CHILD PROOF CLOSURE FOR CONTAINERS

Vincent Scuderi, East Williston, N.Y., assignor to Van Blarcom Closures, Inc., Brooklyn, N.Y.

Filed July 19, 1972, Ser. No. 273,176
Int. Cl. B65d *55/02*
U.S. Cl. 215—9 **2 Claims**



A child proof closure for containers having a threaded neck. A screw type cap has an annular groove in the side of said cap adjacent to the top thereof, and a first circle of teeth on the upper side of the cap. A drive member fits over said cap and has a second circle of teeth adapted to engage said first circle of teeth when said drive member is firmly squeezed in upon said cap. The drive member has a lower lip turned inwardly to engage said groove with a loose fit to permit easy rotation of said drive member when the drive member is not squeezed on the cap. It is necessary to squeeze and turn said drive member simultaneously to unscrew said cap.

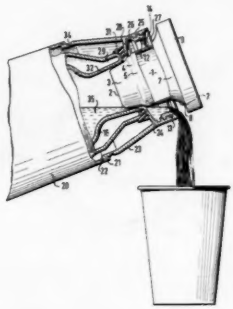
3,809,275

STOPPER

Sigvard Ek, Jonkoping, Sweden, assignor to Aktiebolaget Jonkopings Vacuumindustri, Jonkoping, Sweden

Filed Apr. 21, 1972, Ser. No. 246,407
Claims priority, application Sweden, May 10, 1971, 6041/71
Int. Cl. B65d *47/32*
U.S. Cl. 215—13 R **9 Claims**

A stopper which can be used with a vacuum flash, and includes a head portion, a depending bung portion defining a sealing surface, and a ring portion co-axial with the bung and being spaced therefrom and attached thereto by a plurality of radially extending limbs. The ring portion is provided with a screw thread such that it may be supported in the neck of a flask in at least two axially spaced positions with respect to the



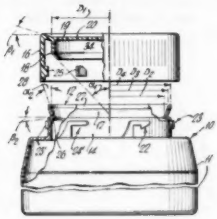
flask one of which is a sealing position and another of which is a position in which liquid may be poured from the flask passing between the bung portion and the ring portion.

3,809,276

PLASTIC BOTTLE AND CAP CONSTRUCTION

William James Landen, Cheshire, Conn., assignor to Eyelet Specialty Company, Wallingford, Conn.

Filed Sept. 27, 1972, Ser. No. 292,650
Int. Cl. B65d *41/06*
U.S. Cl. 215—44 **8 Claims**



The invention contemplates a bottle and closure-cap construction wherein locking formations hold the parts to secure a liquid-seal closure of the bottle. The nature of the liquid-seal engagement is one of circular line contact, involving a cylinder within a conical concavity, specifically between a relatively thin-walled outwardly flaring upper end of the bottle opening and the lower limit of a cylindrical seal projection on the closure wall of the cap. An axially compliant generally radially extending annular portion connects the lower end of the flared neck part to the rest of the neck and is axially stressed to resiliently load the seal engagement.

3,809,277

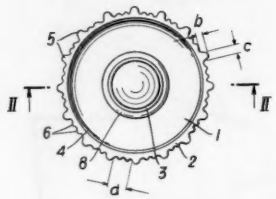
SEAL CAP

Ludwig A. Kaltenhauser, D8261 Stadtplatz 21, Tittmoning, Germany, and Alfred F. Tschuggnal, A4690 Resselstrasse 9, Schwanenstadt, Austria

Filed Apr. 21, 1971, Ser. No. 135,831
Claims priority, application Germany, Apr. 30, 1970, 2021372
Int. Cl. B65d *41/22*
U.S. Cl. 215—320 **12 Claims**

The seal cap of a resilient plastic material and comprises a top, an inner annular skirt which depends from said top and an outer peripheral annular skirt which depends from said top

and which is spaced concentrically from said inner annular skirt. The outer annular skirt has a beaded lower edge provided with peripherally spaced apart, radially outwardly



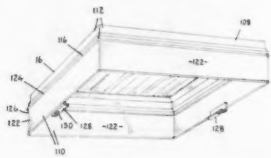
directed projections, which are adapted to support the weight of said cap and tend to bend upwardly under the action of a weight which corresponds to the weight of a filled bottle to which the cap is to be applied.

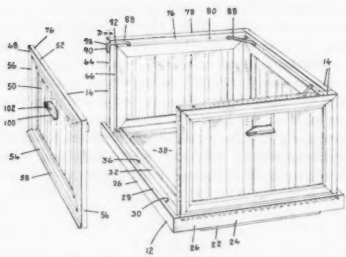
3,809,278

COLLAPSIBLE SHIPPING CONTAINER

Joseph D. Csumrik, Peterborough, Ontario, Canada, assignor to Central Steel Works (Peterborough) Limited, Peterborough, Ontario, Canada

Filed Dec. 21, 1971, Ser. No. 210,531
Claims priority, application Canada, Nov. 2, 1971, 127416
Int. Cl. B65d *7/24, 7/30*
U.S. Cl. 220—4 F **1 Claim**





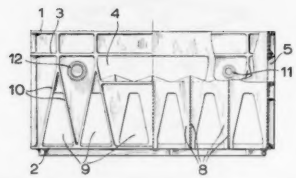
A collapsible rectangular shipping container having a base assembly, four side members and a cover. The container has an erect position for containing goods and a collapsed position in which the component parts are not free to become separated from each other and in which the container may be conveniently stored or transported. The container may be quickly and easily converted between the two positions by hand.

3,809,279

BOTTLE CRATE

Olavi Arjas, Tampere, Finland, assignor to Sarvis Oy, Tampere, Finland

Filed Apr. 4, 1972, Ser. No. 241,030
Claims priority, application Finland, Apr. 7, 1971, 978/71
Int. Cl. B65d *1/24*
U.S. Cl. 220—21 **6 Claims**



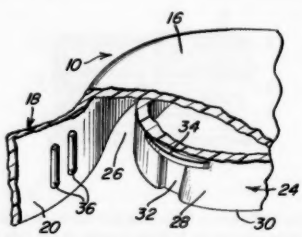
Bottle crate, preferably molded from a synthetic resin material and suitable for handling bottles, e.g. those for beverages, milk and the like. Openings are provided, allowing the bottles in the compartments of the crate to tilt into inclined positions when the crate is stacked on its side. The bottles cannot slip out of the compartments.

3,809,280

CLOSURES FOR CONTAINERS

Wayne Austin Park, Oklahoma City, and Leon Marvin Oswalt, Guthrie, both of Okla., assignors to Cato Oil and Grease Co., Oklahoma City, Okla.

Continuation-in-part of Ser. No. 121,461, March 5, 1971, abandoned. This application Feb. 22, 1972, Ser. No. 228,289
Int. Cl. B65d *41/28, 51/16*
U.S. Cl. 220—42 C **7 Claims**



The present invention relates to improvements in a closure for the opening in a container, said opening having a rim thereabout. The closure comprises a panel section and a first depending integral flange projecting from the panel section defining a socket adapted to snugly receive the container rim. The improvements include a second flange depending from the panel section, coextensive with the first flange and in an inwardly spaced parallel relation thereto. The flanges define a container rim receiving channel about the closure and include an air release means formed in the flanges to enable release of trapped air as the closure is mounted on the container.

3,809,281

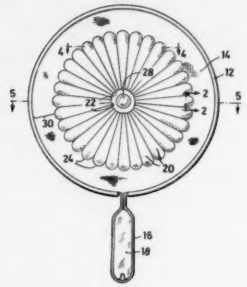
UTENSIL HAVING STABILIZERS FOR PREVENTING SPRAYING WITH FRYING PANS, OR THE LIKE

Kurt-Ulrich Kalkowski, Am Bleiberg 3, 5351 Kommern, Germany

Filed Nov. 14, 1972, Ser. No. 306,194
Int. Cl. B65d *51/16, 51/00;* **B01d** *35/00*
U.S. Cl. 220—44 R **12 Claims**

A cover suitable for use with cooking containers to prevent the splattering of grease includes a handled frame carrying a

mesh screen. The screen includes depressions which accommodate thermal expansion and contraction of the screen to resist the formation of permanent thermally induced deformations in the screen.



3,809,282

CLOSURE COVER WITH PRESSURE RELIEF MEANS

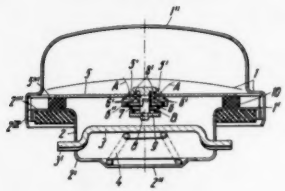
Werner Blau, and Theo Gerdes, both of Langenfeld/Rhineland, Germany, assignors to Blau K.G. Fabrik fur Kraftfahrzeugteile, Langenfeld, Rhineland, Germany

Filed Aug. 3, 1972, Ser. No. 277,801

Claims priority, application Germany, Aug. 5, 1971, 7130127; Aug. 30, 1971, 7133064

Int. Cl. B65d *51/16*

U.S. Cl. 220—44 R **8 Claims**



A sealing cover with pressure relief means for a container such as a petrol tank has a partition with a central hole surrounded by a ring of holes. A rod passes freely through the central hole and has a valve head resting on one side of the partition to cover and seal the central hole. The rod also carries a valve plate resting on the other side of the partition to cover the ring of holes. One or two springs are provided to hold the valve head and plate in sealing positions, and allow them to lift off the partition on the occurrence of a predetermined under or over pressure in the tank, to relieve the said pressure.

3,809,283

PROTECTIVE SCORE SHIELD FOR EASY OPENING CONTAINER

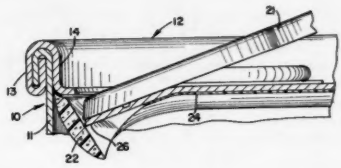
Alfred W. Kehe, Berkley, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Continuation of Ser. No. 151,381, June 9, 1071, abandoned, which is a continuation-in-part of Ser. No. 884,114, Dec. 4, 1969, abandoned, which is a continuation-in-part of Ser. No. 826,966, May 22, 1969, abandoned. This application July 20, 1972, Ser. No. 273,371

Int. Cl. B65d *17/20*

U.S. Cl. 220—54 **14 Claims**

This disclosure relates to an easy opening container of the type wherein one end has an easy opening end closure including a removable panel portion defined by a score line. The end closure includes pliable band superimposed over the score line and attached to either one or both of the inner or the outer faces of the end closure. Upon removal of the removable panel portion, the band attached to the inner face provides a protective ledge for the raw metal edge about the opening and the band attached to the outer face provides a protective ledge for the removed panel portion.



3,809,284

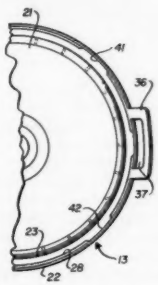
REUSABLE PLASTIC SNAP-ON CLOSURE

Roy G. Churan, Oak Lawn, Ill., assignor to Vulcan Plastics Inc., Addison, Ill.

Filed Feb. 3, 1972, Ser. No. 223,139

Int. Cl. B65d *43/10*

U.S. Cl. 220—60 R **1 Claim**



A snap-on type closure which includes, generally, an annular inverted U-shaped channel about its top wall structure into which the upper edge of the open end container is received. This upper edge of the container has a bead or curl on it, and the annular outer wall of the U-shaped channel has interlocking means on its interior surface which interlock with the curl on the container to affix the closure to the container. At least one gripping and pulling handle is affixed to the annular outer wall of the U-shaped channel, for removing it. It has been found that by placing a knee on the top of the closure, gripping the bail normally provided on such containers with one hand, and the handle on the closure with the other hand, a portion of the edge of the closure can be pulled free sufficiently to break the interlocking seal, and once broken, the closure can be pulled or peeled off of the container. Thereafter, the closure can be replaced, with a resulting sealed-tight engagement which is as virtually as good as the original seal.

A single handle can be provided, but a pair of handles preferably are provided. Alternatively, with a single handle, an

extended interruption can be provided in the interlocking means on the closure. The second handle and/or the extended interruption permit the closure to be more easily pulled or peeled off the container.

3,809,285

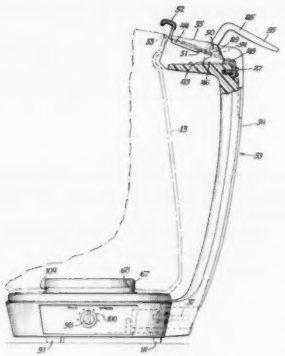
ELECTRIC COFFEE PERCOLATOR

John J. Unger, Elmhurst; Robert J. Augustine, Downers Grove, and Farees U. Khaja, Chicago, all of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Division of Ser. No. 51,193, June 30, 1970, Pat. No. 3,682,089. This application May 30, 1972, Ser. No. 258,025

Int. Cl. B65d *25/28*

U.S. Cl. 220—94 R **7 Claims**



An electric coffee percolator having a glass vessel with an opening in the bottom through which a metallic well for a pump assembly extends. Associated with the well are electric heating elements for both operating the percolator pump and keeping the contents of the vessel warm after coffee making has been completed. The seal between the metallic heater and well portion and the glass vessel is accomplished by an annular gasket which is of sustantial vertical height and includes an undercut at the lower edge thereof to receive and lock the glass vessel portion in sealed engagement with the metallic well portion. All of the functional parts enclosed in the base of the percolator including the thermostat, the main heating element, and the keep warm heater are supported in a unitary assembly which rests upon a plastic base from which the handle is also supported. The upper portion of the handle includes a simple latch which detachably engages the upper edge of the glass vessel, the latch actuating portion being easily accessible to the hand of the user and in its released position being substantially exposed so as to warn the user that the latch is not engaged with the glass vessel.

3,809,286

GRAVITY DISCHARGE APPARATUS

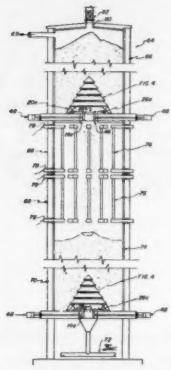
Frank J. Miksitz, Phillipsburg, N.J., assignor to Universal Feeders, Inc., Bethlehem, Pa.

Filed Jan. 7, 1972, Ser. No. 216,105

Int. Cl. B65g *65/70*

U.S. Cl. 222—1 **9 Claims**

Apparatus and method for conveying granular material by gravity assist from an upper zone and a lower zone by means of a horizontal annular plate which is disposed between the two zones, the plate being orbited in a horizontal plane below a fixed shroud so that the material flows downwardly through



the aperture in the plate along a path which moves in a horizontal plane around the periphery of the aperture.

3,809,287

APPARATUS FOR CLOSED CYCLE DISPENSING OF INDIVIDUAL ITEMS

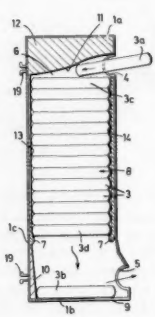
Wolf Georg Muller-Scherak, Vincenz-Statz Str. 8, 5 Cologne 41, Germany

Filed Sept. 6, 1972, Ser. No. 286,694

Claims priority, application Germany, Sept. 8, 1971, 2144812

Int. Cl. B65g *57/02*

U.S. Cl. 221—66 **5 Claims**

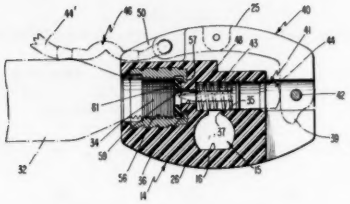


This invention relates to a novel apparatus for the closed cycle dispersing of individual flat items of identical shape stacked in a dispenser, the items being tape magazines or the like, a housing for the stacked items or articles, said housing having opposite end portions and article insertion aperture at one of the end portions and an article discharge aperture at the other of the end portions, projection means adjacent the article discharge aperture for normally restraining movement of the stacked articles therepast but being operative to permit individual article movement to said article discharge aperture, and an insertion gap in the housing defined between an article most adjacent the article insertion aperture and a surface of the housing disposed in opposed relationship thereto, and the insertion gap narrowing in a direction away from the article insertion aperture whereby upon the insertion of an article into the gap, the stack of articles is progressively urged toward the article discharge aperture causing an article most adjacent thereto to pass the projection means for dispensing through the article discharge aperture.

ERRATUM

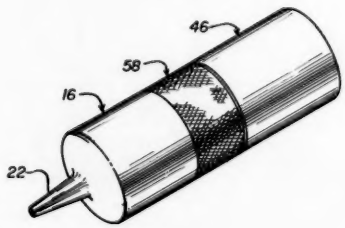
For Class 222—1 see:
Patent No. 3,809,286

3,809,288
INFLATION MANIFOLD
Glenn H. Mackal, 83 Chestnut Ridge Rd., Saddle River, N.J.
Filed Mar. 26, 1973, Ser. No. 344,749
Int. Cl. B63c 9/24
U.S. Cl. 222—5 3 Claims



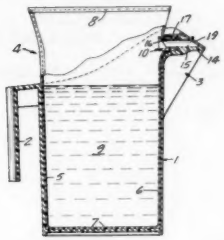
A manifold for use with an inflatable article such as a life vest, life raft, and the like, an improved handle for a lanyard for operating the capsule containing compressed gas mounted on the manifold, a method of and an apparatus for forming such lanyard handle and securing it to the lanyard cord, and an improved means for securing the lanyard cord to the capsule-piercing lever mounted on the manifold. The manifold body is preferably an integral molding of strong and impact-resistant plastic material having an internally threaded metal sleeve therein receiving the threaded neck of a compressed gas-containing capsule. The body of the manifold is so formed as to provide a continuous passage within the molded plastic material from adjacent the outer end of the capsule and within the metal insert sleeve into the chamber formed within the plastic body of the manifold, thereby eliminating what might otherwise be one or more possible leakage paths for the article-inflating gas as it travels from the capsule into the inflatable article.

3,809,289
MIXING CONTAINERS
Henry Komendowski, Evanston, Ill., assignor to Automatic Liquid Packaging Inc., Elk Grove Village, Ill.
Filed Dec. 20, 1971, Ser. No. 210,005
Int. Cl. B67b 7/24
U.S. Cl. 222—83 10 Claims



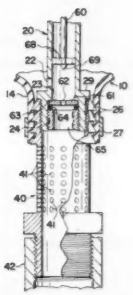
The invention relates to a combination in which two containers include a first and a second product respectively, and a coupler which functions both to affix the two containers together and to unseal one or both containers to permit the products to be mixed and then dispensed therefrom.

3,809,290
LIQUID CONTAINING AND DISPENSING DEVICE
Justin M. Schmit, Pompano Beach, Fla., assignor to Artic Pac, Inc., Pompano Beach, Fla.
Filed Oct. 12, 1972, Ser. No. 296,834
Int. Cl. B67b 7/28
U.S. Cl. 222—88 13 Claims



A liquid containing and dispensing device consisting of a flexible sealed liquid-containing pouch mounted within the confines of a rigid wall container having a pouring spout characterized by a bayonet-ended tubular element constructed and arranged to perforate a portion of the side wall of the pouch which is secured to and extends across the open end of a tubular member disposed within the confines of the pouch, to thereby facilitate dispensation of its contents. The pouch is capable of being readily removed and replaced with a similar pouch.

3,809,291
LIQUID PROPORTIONING SYSTEM
Chester A. Purdy, R.F.D. No. 1, Belmont, Wis.
Filed Sept. 5, 1972, Ser. No. 286,200
Int. Cl. B67d 5/60
U.S. Cl. 222—145 15 Claims



Liquid proportioning apparatus that provides equalized hydrostatic pressure on two separate bodies of liquid and equalizes their temperature, throughout wide variations of pressure and temperature to which one of the liquids may be subjected, and that utilizes separate means for metering the two liquids in a predetermined ratio regardless of such variations in temperature and pressure, and with no moving parts. Accuracy of proportioning results from the use of hydrodynamically identical orifices (e.g., identical in both size and configuration) in separate metering means, the ratio of the number of such orifices in the separate metering means determining the proportioning of the liquids metered thereby. In specific embodiments for supplying medicated beverage to farm animals, a collapsible bag containing a concentrated medicament is at least partially submerged in water main-

tained under pressure so that the two liquids are in heat exchange and pressure equalizing relationship with each other. The medicament and water, at points thus substantially equalized in temperature and pressure, are separately metered from the bag and reservoir by hydrodynamically identical orifices and flow together to a drinking trough.

3,809,292

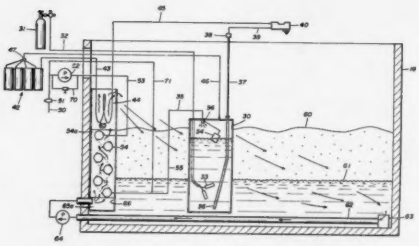
STADIUM FILLER

Jack J. Booth, and William C. Branch, both of P.O. Box 507, Carrollton, Tex.

Filed Jan. 31, 1972, Ser. No. 221,940

Int. Cl. B67d *5/62*

U.S. Cl. 222—146 C **9 Claims**



A high volume stadium type filler for delivering substantially uniform chilled carbonated beverages at high volume wherein an ice chest is provided with a carbonator tank therein, a drain in the bottom near one end thereof leading through a pump and a baffled chamber extending the height of and in the other end thereof with water cooling coils in the chamber leading from a pressurized source to the carbonator with means for delivering water from the bottom of said carbonator to a dispensing valve simultaneously with syrup, both under CO_2 gas pressure.

3,809,293

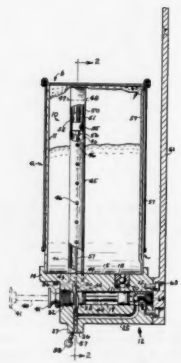
DISPENSER HAVING AIR VENT CLEAN-OUT

Albert R. Chappell, Jerseyville, Ill., assignor to The Metalife Company, Wentzville, Mo.

Filed May 10, 1973, Ser. No. 358,920

Int. Cl. B67d *5/42*

U.S. Cl. 222—148 **1 Claim**



For using dispensers of the type in which a first can of semi-fluid hand cleaner or similar viscous substance is filled into a dispenser sleeve, and then a second can of the substance is inverted and applied telescopingly over the sleeve, accumulation of the substance in the internal vent tube of a large size dispenser may make it difficult to remove and replace cans, and may interfere with air inflow necessary for dispensing. In the present invention, air inflow, to permit removal of such a first can, is assured by a pull-down piston in the vent tube to drive any clogging substance out through the nozzle passage. On applying a second full can over the sleeve, the cleaned tube permits easy expulsion of intervening air. Even while the tube is clogged, dispensing may proceed normally; a groove leading downward on the outer side of the sleeve permits continuing inflow of air.

3,809,294

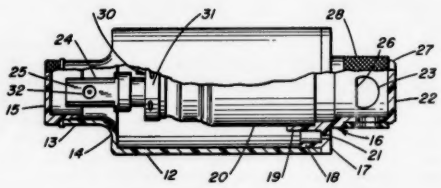
DISPENSING LUNG CONTACTING POWDERED MEDICAMENTS

William Lee Torgeson, Minneapolis, Minn., assignor to American Cynamid Company, Stamford, Conn.

Filed June 27, 1973, Ser. No. 374,176

Int. Cl. A61m *15/02*

U.S. Cl. 222—182 **3 Claims**



A combination aerosol container carrier and deceleration chamber carries an aerosol container in one configuration and in another dispenses powdered medicament from the aerosol container with inhaled particles predominantly below 10 microns in size at a low velocity which gives a comparatively high degree of topical effect in the lungs as compared with systemic effect from powders absorbed in the mouth. The lungs may be used as an effective administration route for systemic medicament effect.

3,809,295

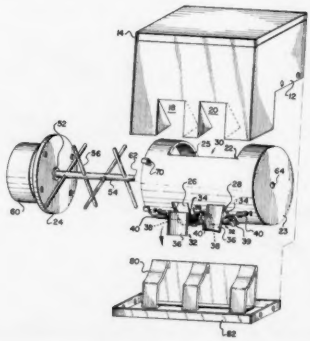
ICE CUBE DISPENSING MACHINE

Michael Vitencz, 182 Hollywood Ave., Fairfield, N.J.

Filed Oct. 30, 1972, Ser. No. 301,979

Int. Cl. B67d *5/64*

U.S. Cl. 222—183 **8 Claims**



An ice cube dispensing machine is provided which is adapted to store ice cubes without having the cubes sticking to

each other and to dispense one or more ice cubes at a time. The ice cube dispensing machine includes a storage member having a chamber therein for storing ice cubes and an inlet and outlet, a rotatable shaft, horizontally disposed within said chamber driven by motor means, and having a plurality of angular bars extending therefrom, for keeping ice cubes from sticking to one another and moving the ice cubes to the outlet in said storage member. Cover means are provided for the outlet in said storage member, which are adapted to move between open and closed positions, for dispensing ice cubes or for retaining ice cubes in said chamber, respectively.

The ice cube dispensing machine is portable or may be secured to a shelf or table top or other support and employed in the home or in commercial establishments such as restaurants or bars, for dispensing ice cubes.

3,809,296

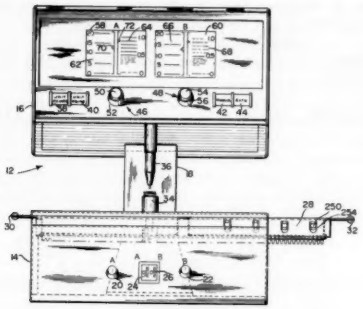
DISPENSING APPARATUS WITH BI-DIRECTIONAL VALVE

Michael E. Croslin, Forest Hills, N.Y., assignor to Grumman Data Systems Corporation, Bethpage, N.Y.

Division of Ser. No. 883,573, Dec. 9, 1969, Pat. No. 3,665,980. This application Jan. 3, 1972, Ser. No. 214,849

Int. Cl. G01f *11/32*

U.S. Cl. 222—309 **1 Claim**



A dispensing apparatus is provided which has various modes of operation including automatic, manual and prime modes. The dispensing apparatus includes coarse and fine metering devices consisting of cylinders with pistons displaceable therein, the displacement of the pistons being controlled by adjustable switches in turn controlling electronic circuits which reverse the direction of movement of the pistons. The metering devices are associated with dispensing nozzles beneath which can be stepped a tray in which are positions for vials or other such receptacles. A sensing switch is provided to detect the presence or absence of receptacles in the aforesaid positions to prevent attempts to dispense fluids into positions in which there are no receptacles. The tray is electronically controlled for automatic or manual modes of operation and a cam control switch is provided which determines whether the tray has been stepped to discrete positions for which dispensing operations might be effected. The apparatus employs a bi-directional, three port valve for enabling the withdrawal of one or more fluids from a source and for dispensing the thusly withdrawn fluids into the aforenoted receptacles. The dispensing apparatus is controlled by a logic circuit involving combinations of flip flops, OR gates and AND gates, and further including decade counters for counting the number of receptacles filled and comparing the count with a selected number in an electronic comparator whereby operation can be terminated after an appropriate number of cycles. The selected quantities for dispensing are indicated on conveniently positioned indexes.

3,809,297

PISTON AND CYLINDER DEVICE

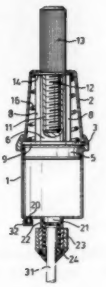
John H. Poulten, Upminster, England, assignor to John Poulten Limited, Barking, Essex, England

Filed Feb. 13, 1973, Ser. No. 332,220

Claims priority, application Great Britain, June 21, 1972, 29152/72

Int. Cl. G01s *11/06*

U.S. Cl. 222—309 **7 Claims**



The invention is a device for filling and emptying pipettes which is particularly applicable to situations where it is desired to take a large number of samples each of which is of identical volume. The device comprises a piston and cylinder arrangement which is arranged to be releasably sealed to the end of a pipette, the device being actuated by depressing a piston rod against the action of a spring. The effective stroke of the piston is variable, so as to adjust the amount of liquid induced into the pipette, by arranging the piston rod in two parts which are in screw-threaded engagment one with the other, whereby the length of the piston rod can be altered.

3,809,298

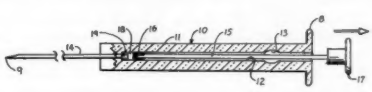
SYRINGE

Rano J. Harris, Sr., and Rano J. Harris, Jr., both of Baton Rouge, La., assignors to Precision Sampling Corporation, Baton Rouge, La.

Filed July 18, 1973, Ser. No. 380,461

Int. Cl. A61m *5/24*

U.S. Cl. 222—386 **9 Claims**



A liquid syringe, particularly a microsyringe, of a type suitable for separating a trapped gas from a liquid, and for dispensing small, preselected, accurately measured quantities of the liquid specimen into a media, e.g., a G.C. or mass spectrograph. The syringe is characterized by a barrel, a tubular needle mounted on the forward end of the barrel and a reciprocable plunger mounted on the opposite end of the barrel. The bore through the needle and barrel are communicated one with the other, and the bore of the barrel is provided with an opening of cross-section larger than the cross-section of the bore forward of the enlarged opening. The enlarged opening permits separation of gas from a liquid specimen. By withdrawal of the forward end of the plunger rearwardly into this opening, gas enters into the enlarged opening, and on forward movement of the plunger the liquid is separated forward of the plunger tip and gas is transmitted rearwardly through the annulus between the plunger and inside wall of the barrel rearwardly of the enlarged opening.

3,809,299

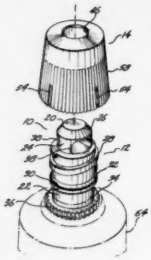
CAPTIVE DISPENSER CAP

Norma Sand, 19301 2nd, N.W., Seattle, Wash., and Per Sand, P.O. Box 644, Blaine, Wash.

Filed Jan. 9, 1973, Ser. No. 322,174

Int. Cl. B67d *3/02*

U.S. Cl. 222—521 **6 Claims**



A hollow core with one end closed and the other end opening into and joined to a container, the core has an area of reduced cross-section, then is beveled inward to the closed end, at least one opening extends through the side of the reduced area, a shell mounted to the core has an opening at its outer end, the sides of which contact the core beveled surface when the shell is fully inserted to form a seal and means to provide for movement between open and closed position of the shell and means for limiting the outward travel of the shell.

3,809,300

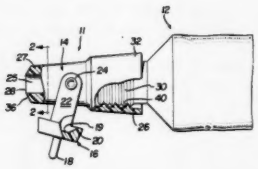
CLOSURE DEVICE FOR DISPENSING TUBES

Theodore B. Russell, 2190 N.E. 124th St., North Miami, Fla.

Continuation-in-part of Ser. No. 149,574, June 3, 1971, abandoned. This application Nov. 29, 1972, Ser. No. 310,252

Int. Cl. B67d *3/00*

U.S. Cl. 222—545 **4 Claims**



A closure device for closing necked dispensing tubes of the toothpaste type is provided, said device having major features which make it exceptionally convenient to use as it is constructed to be quickly opened or closed with a single hand, is non-losable from the tubes in either open or closed positions, and is semi-universal in being adapted to fit a variety of ordinary squeeze tubes of different neck diameters and types.

3,809,301

STORE FOR BAND-SHAPED INFORMATION CARRIERS

Gunter Feier; Hansjorg Koch, both of Bonlanden, and Walter Suchy, Stuttgart, all of Germany, assignors to Franz Morat GmbH, Stuttgart-Vaihingen, Germany

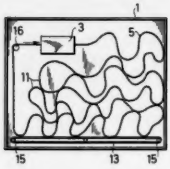
Filed Jan. 24, 1973, Ser. No. 326,268

Claims priority, application Germany, Jan. 27, 1972, 2203715

Int. Cl. B65h *25/00*

U.S. Cl. 226—25 **18 Claims**

An enclosed store for an endless band-shaped information carrier in which a movable endless conveyor belt is arranged so as to support and assist movement of the lowermost loops of the stored endless carrier toward the outlet of the store or toward a means responsive to the information on said carrier whereby possible breakage and binding of the carrier is diminished.



3,809,302

INFORMATION RETRIEVAL APPARATUS

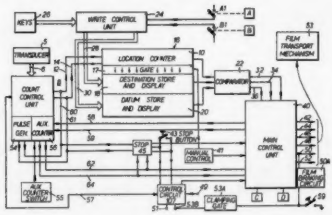
Brian R. Malyon, Feltham, England, assignor to Selectro-Micro Company Limited, London, England

Filed May 8, 1973, Ser. No. 358,464

Claims priority, application Great Britain, May 9, 1972, 21476/72

Int. Cl. B65h *23/18*

U.S. Cl. 226—33 **11 Claims**



Information retrieval apparatus, particularly for locating a desired frame on a microfilm strip, comprises a photo-electric transducer for detecting the passage therepast of markers on the film strip, each marker being associated with a particular frame, a counter for counting the corresponding signals produced by the transducer, storage means for storing the serial number of a frame to be brought to a reading position, comparing means for continually comparing the count of the counter with the stored serial number, and means for arresting the film movement when the comparison shows equality. The apparatus includes means for slowing the film at a predetermined number of markers before the marker corresponding to a selected frame and means for varying the predetermined number in accordance with the size of the frames on the film strip being used. The apparatus also includes means for selecting from the transducer output a signal representative of the leading edge of the marker, according to the direction of motion of the film, and means operative to halt the film with the transducer located midway between the ends of the selected marker.

3,809,303

DEVICE FOR GUIDING PRINTED PAPER WEBS FROM A PRINTING MACHINE

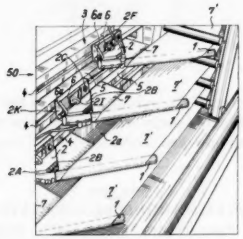
Heinrich Brunner, Zofingen, Switzerland, assignor to Maschinenfabrik Wifag, Bern, Switzerland

Continuation-in-part of Ser. No. 32,696, April 28, 1970, abandoned. This application May 12, 1972, Ser. No. 252,606

Claims priority, application Switzerland, May 2, 1969, 6719/69

Int. Cl. B41f *13/06*

U.S. Cl. 226—197 **9 Claims**



A device for guiding printed paper webs from a printing machine includes a slide assembly mounted in a groove formed in and extending along the length of one side of the machine at a location directly above or below a passage through which the paper web can be directed laterally of the printing machine. The slide assembly includes a socket in which a guide rod is mounted and extends obliquely outwardly from one side of the machine. After the paper web moves through the passage in the side of the machine, it passes over the guide rod and its path of travel is changed so that it extends substantially parallel to the side of the machine through which it has passed.

3,809,304

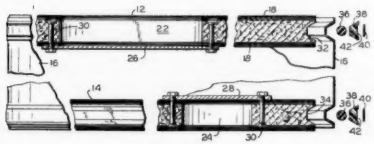
REUSABLE CONTAINER FOR BULK MATERIALS AND OTHER ITEMS

Robert D. Flanders, 18040 Lower Boones Ferry Rd., Tigard, Oreg.

Filed May 15, 1972, Ser. No. 253,271

Int. Cl. B65d *5/36, 7/42*

U.S. Cl. 229—5.7 **14 Claims**



A container for shipping loose bulk materials, packaged products and other items. One embodiment of the container comprises a collapsible cylindrical wall portion with a pair of rigid disc-shaped head members capping the top and bottom ends of the wall portion. When the container is full, its top and bottom heads are kept apart by the container's contents. As the container is emptied its flexible wall portion gradually collapses until the contents are completely emptied, whereupon the collapsed container can be shipped in compact form back to its point of origin for reuse. The top and bottom heads of the container are detachable from the flexible wall portion so that any part of the container may be easily replaced if damaged. A second embodiment of the container is similar to the first except that the wall portion comprises a bendable sheet metal material wrapped around the top and bottom heads, with the edges of the sheet material detachably joined together. After being emptied, this latter container can be disassembled and its wall portion laid flat for compact shipment to its point of origin for reuse.

3,809,305

COUPLING OR LOCK BETWEEN TWO SHEETS OF DIFFERENT MATERIALS SUCH AS CARTON AND PLASTIC

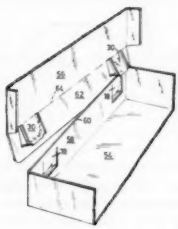
Karl Rune Persson, Halmstad, Sweden, assignor to Sprinter Pack AB, Halmstad, Sweden

Filed Nov. 1, 1972, Ser. No. 302,802

Claims priority, application Switzerland, Nov. 1, 1971, 13930

Int. Cl. B65d *45/14*

U.S. Cl. 229—45 **10 Claims**



A coupling or lock connecting a first carton or plastic sheet part with a second plastic sheet part. The first part has a U-shaped slit to form a locking tongue and the second part has a recess having one end open to receive the locking tongue. The opposite end and side walls of the second part from abutments for the end edge and side edges of the locking tongue. The recess provided in one side of the second part forms a projection on the opposite side of the second part. The opening formed by the slit defining the locking tongue is moved over the projection so that the walls of the recess will be clamped between the edges of the opening and the corresponding edges of the locking tongue.

3,809,306

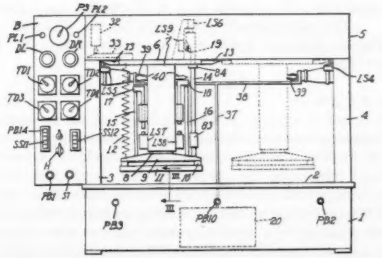
APPARATUS FOR ROUNDING WELDED EDGE SEAMS

Anton Muhlbach, Frankfurt am Main-Sossenheim, and Gerhard Lauckhardt, Frankfurt am Main-Rodelheim, both of Germany, assignors to USM Corporation, Boston, Mass.

Division of Ser. No. 49,111, June 23, 1970, Pat. No. 3,673,300. This application Mar. 2, 1972, Ser. No. 231,130

Int. Cl. B23k *1/20*

U.S. Cl. 228—5 **2 Claims**



An apparatus for producing rounded edges on cuts made through welded seams in layers of material by a die placed on

the material in which the die is first pressed into but not through the seams while the weld is soft to roundingly deform the material adjacent the die. After solidification of the weld, further die pressure cuts the material to form a welded edge seam having rounded edges.

3,809,307

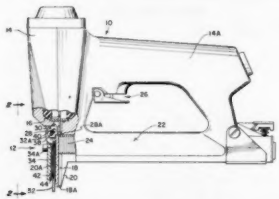
SAFETY ASSEMBLY FOR FASTENER DRIVING TOOL

Oscar A. Wandel, Mundelein, and Frank Mullaney, Villa Park, both of Ill., assignors to Fastener Corporation, Franklin Park, Ill.

Filed Feb. 23, 1973, Ser. No. 335,348

Int. Cl. B25c *7/00*

U.S. Cl. 227—8 **18 Claims**



A safety mechanism particularly suited for smaller fastener driving or applying tools includes a mechanical latch carried on the nosepiece structure of the tool with a part of the latch disposed within the drive track immediately below the end of the driver blade. The latch is coupled to a workpiece engaging member which retracts the latch to permit driver blade movement when the tool is placed adjacent a workpiece. If the tool is operated before being placed against a workpiece, the driver blade engages and locks the latch in latching position so that it cannot be retracted or released by thereafter placing the tool against the workpiece. The illustrated embodiments include both positive and indirect cam type couplings between the latch and the workpiece engaging member as well as pivoting and sliding latches.

ERRATUM

For Class 227—8 see:
Patent No. 3,809,307

3,809,308

MACHINE FOR MAINTAINING CONSTANT THE DISTANCE OF A CUTTING OR WELDING TORCH FROM THE WORK PIECE

George Roeder, Frankfurt/Main, and Claus Schmidt, Ebersteinburg, both of Germany, assignors to Messer Griesheim GmbH, Frankfurt/Main, Germany

Division of Ser. No. 62,440, Aug. 10, 1970, Pat. No. 3,736,647.

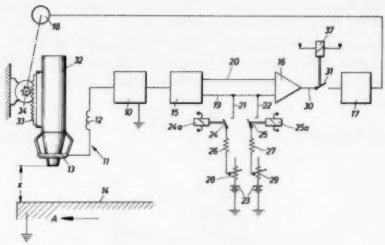
This application Feb. 16, 1973, Ser. No. 333,330

Claims priority, application Germany, Aug. 16, 1969, 1941728

Int. Cl. B23k *5/00*

U.S. Cl. 228—9 **4 Claims**

In a torch cutting or welding machine an apparatus for maintaining constant the distance of the cutting or welding torch from a work piece being cut or welded in which the sensing electrode is secured to the torch and forms a capacitance with a surface portion of the work piece, resonant and discriminating circuits producing a predetermined voltage corresponding to a predetermined value of the capacitance and such voltage operating a positioning motor which positions the torch to establishing the original capacitance value corresponding to a predetermined distance between the torch and the work piece surface, and device for providing a signal to compensate the signal portion from the discriminator circuit in response to a change in the capacitance due to a



change in the area of the sensing surface of the sensing electrode projected on the surface which otherwise would cause a further false positioning of the torch.

3,809,309

DIFFUSION BONDING APPARATUS

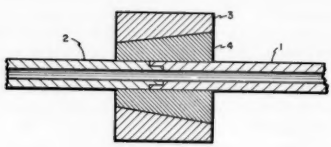
Roy I. Batista, Palos Verdes Estates, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 63,705, Aug. 14, 1970, Pat. No. 3,703,032.

This application Sept. 13, 1972, Ser. No. 288,533

Int. Cl. B23k *19/00*

U.S. Cl. 228—44 **2 Claims**



A diffusion bonding process may be performed by heating a joint of two metal tubes in tight restriction. The difference in the coefficient of thermal expansion between the metal tubes and a retaining sleeve and wedge causes radial pressure which diffusion bonds the tubes at the joint.

ERRATA

For Classes 229—5 and 229—45 see:
Patents Nos. 3,809,304 and 3,809,305

3,809,310

HEXAGONAL CONTAINER FOR FOOD PRODUCTS OR THE LIKE

Thomas VanderLugt, Jr., Kalamazoo, Mich., assignor to Brown Company, Kalamazoo, Mich.

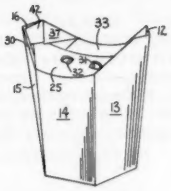
Filed Mar. 1, 1971, Ser. No. 119,593

Int. Cl. B65d *5/34*

U.S. Cl. 229—26 **10 Claims**

A carton for food products or the like of generally hexagonal shape formed from an integral blank of a foldable material such as paperboard. The carton is provided with a self-locking, foldable end closure which is connected to side panels of the carton and which comprises a pair of overlapping closure flaps hingedly connected to opposing side panels which lock in place when folded downwardly by the interaction of a pair of locking tabs and retaining flaps therefor. The locking tabs are provided on one of the closure flaps and the

retaining flaps are provided on a pair of web means that are associated with the other of said closure flaps and each web means hingedly connected between the closure flap and a side



panel adjacent to the side panel connected with the closure flap. An integral blank from which the carton can be erected is also disclosed.

3,809,311

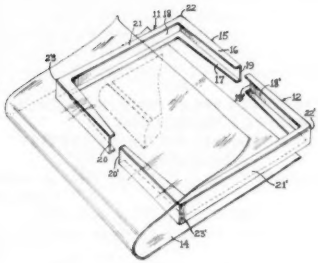
BOOK PROTECTOR AND MAILER

Seymour F. Fohrman, 8242 McCormick Blvd., Skokie, and John F. Chmela, 7256 W. Davis St., Morton Grove, Ill.

Filed May 17, 1972, Ser. No. 250,835

Int. Cl. B65d *65/10, 85/30*

U.S. Cl. 229—87 R **3 Claims**



A light-weight molded plastic book protector and mailer consisting of rigid book edge embracing members secured about the periphery of the book by a transparent envelope formed from a transparent sheeting.

3,809,312

PUSHBUTTON TAMPER PROOF TAXI-METER

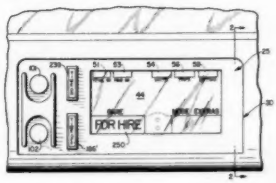
Edward C. Warrick; Leo M. Walch, Jr., and Dennis R. Hammerle, all of Pittsburgh, Pa., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed May 23, 1973, Ser. No. 363,131

Int. Cl. G07b *13/00;* **G06c** *5/02*

U.S. Cl. 235—30 R **19 Claims**

A taximeter in which the metering apparatus and a control circuit for the metering apparatus are enclosed in a tamper-proof housing, in which the control circuit is switch operated to selectively condition the metering apparatus to prevent and provide for the registration of a fare, in which tampering with circuit connections between the taxicab's battery and the control circuit and/or with circuit connections between one or more optional passenger detecting switch devices and the control circuit causes a shutter to conceal one or more of the taximeter's registers, in which the passenger detecting switch devices are effective, upon detecting the presence of a pas-



senger, to render the control circuit effective to place the metering apparatus in a hired condition for registering a fare in the event that the driver fails to initiate operation of the meter upon accepting a passenger, in which the control circuit is switch operated for each hired setting to enable the driver to incrementally dispense a preset amount of free waiting time which is not charged to the passenger when the taxicab is held up by traffic or other conditions, and in which the clock or time drive of the meter is utilized to time the free waiting time period.

3,809,313

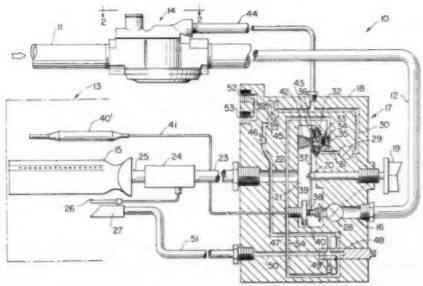
FUEL CONTROL SYSTEM AND PRESSURE REGULATOR CONSTRUCTION THEREFOR AND METHOD FOR OPERATING THE SAME

Charles D. Branson, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Oct. 18, 1972, Ser. No. 298,521

Int. Cl. F23n *5/06*

U.S. Cl. 236—15 A **13 Claims**

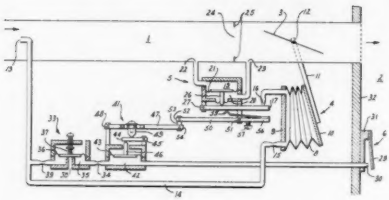


A fuel control system for a cooking apparatus having a source of fuel, main burner means and pilot burner means. A first pressure regulator for regulating the pressure of the fuel delivered from the source to the main burner means and a second pressure regulator for regulating the pressure of the fuel delivered from the source to the pilot burner means for both the operation of the standby flame means of the pilot burner means and the operation of the heater flame means of the pilot burner means independently of the pressure regulation of the fuel for the main burner means.

3,809,314
SELF-POWERED VARIABLE VOLUME AIR DAMPER CONTROL

Roger P. Engelke, 629 Rome Ave., Rockford, Ill., and Marvin H. Zille, c/o Barber-Colman Company, Rockford, Ill.

Continuation of Ser. No. 190,914, Oct. 20, 1971, abandoned.
This application Mar. 21, 1973, Ser. No. 343,219
Int. Cl. F24f *13/10*
U.S. Cl. 236—49 8 Claims

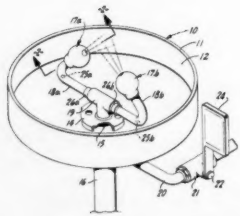


A self-powered control operates a damper to regulate volume flow of air from a duct into a conditioned space solely as a function of a sensed condition regardless of air supply pressure.

3,809,315
EYEWASH FOUNTAIN AND NOZZLE STRUCTURE THEREFOR

Allen C. Wright, Moraga, Calif., assignor to Haws Drinking Fountain Company, Berkeley, Calif.

Filed Oct. 4, 1972, Ser. No. 294,863
Int. Cl. A61h *33/04*
U.S. Cl. 239—31 8 Claims

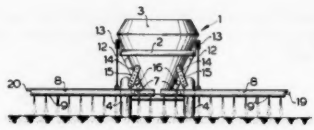


An eyewash fountain and nozzle structure therefor that are especially useful in industrial and laboratory environments to provide a water discharge suitable for flooding the eyes of a workman to flush irritants and injurious matter therefrom. Use of such fountains is mostly sporadic and occasional so that water is ordinarily absent from the nozzle structure and supply conduit leading thereto at the start of each use either because of evaporation therefrom or, in the case of a freeze-proof fountain, because of the self-draining characteristics thereof. The fountain has a flow control device interposed in the water flow circuit to maintain the volumetric flow of water to the nozzle structure relatively independent of supply line pressure and to prevent surging of the water discharge from the nozzle structure. The nozzle structure has a large chamber provided with spaced apart inlet and outlet openings, and a diffuser interposed between such openings in alignment wtth the inlet intercepts any stream of water injected into the chamber to reduce its momentum and convert the discharge of water through the outlet into a lower-energy reduced-velocity flow.

3,809,316
MACHINE FOR THE DISTRIBUTION OF GRANULATED AND POWDERED MATERIALS

Heinz Dreyer, Hasbergen-Gaste, Germany, assignor to Amazonen-Werke, H. Dreyer, Postfach, Gaste, Germany

Filed Nov. 29, 1972, Ser. No. 310,492
Claims priority, application Germany, Dec. 8, 1971, 2160751
Int. Cl. B05b *1/20*
U.S. Cl. 239—167 11 Claims

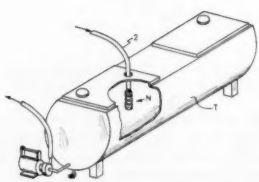


A farm machine such as a planter having pivotably mounted side booms for distribution of, for example, seeds. A lifting system is provided for pivoting the booms. Stop means are provided for limiting upward pivoting of the side booms to a small angle above the horizontal for accommodating the making of turns by the machine. The stop means are disengageable, and when the stop means are disengaged, the booms can be pivoted upwardly beyond said small angle to a transport position.

3,809,317
ROTATABLE SPRAY NOZZLE ASSEMBLY

Lloyd F. Bender, Rt. 2, Hayward, Wis.

Filed Mar. 24, 1972, Ser. No. 237,738
Int. Cl. B05b *3/06*
U.S. Cl. 239—251 10 Claims

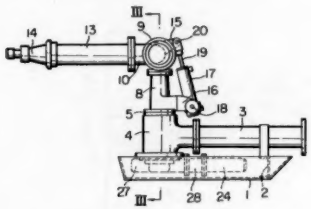


A rotatable spray nozzle assembly for cleaning the interior of a bulk liquid storage tank or the like including a rotatable nozzle member and a stationary inner, central member which together define two interior chambers separated by an automatically operable valve. Water pressure acts first in one chamber to eject water through apertures of the nozzle member, and then when a sufficient head of pressure is built up through the apertures to effect a spraying action, the valve opens automatically to cause pressurization in the second chamber and consequent rotation of the device by means of a stream of fluid directed at an angle to a radius of said nozzle member.

3,809,318
MONITOR FOR DIGGING COAL

Masami Yamamoto, Tokyo, Japan, assignor to Mitsui Mining Company, Limited and Nihom Kikai Kogiyo Co., Ltd., both of Tokyo, Japan

Filed Oct. 31, 1972, Ser. No. 302,503
Claims priority, application Japan, Nov. 12, 1971, 46-90435
Int. Cl. E21c 45/00
U.S. Cl. 239—273 4 Claims

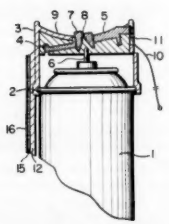


The present invention relates to a monitor used in coal mines for digging coal. The impact of pressured water against a coal face through the nozzle of the monitor effects the coal digging operation. In working the coal face, coal thrown out from the coal face will clash against the monitor, and falling coal lumps will bury the monitor thus decreasing the efficiency of coal digging operation, and the known type of monitor has suffered damage from such severe conditions. According to the present invention, the above impediment has been for the most part eliminated by virtue of the novel constructions wherein the cylinder for raising and lowering the nozzle of the monitor is mounted just behind the monitor while the unit for turning the nozzle of the monitor is disposed under main water supply pipe and is received and closed in a housing. This construction has further advantages in that the full height of the monitor is markedly decreased and in that the stability thereof is greatly increased.

3,809,319
WALL AEROSOL SPRAY

Eiichi Kimura, 198 banchi 3 chome Kamifukushimakita, Osaka, Japan

Filed June 1, 1973, Ser. No. 366,131
Claims priority, application Japan, Oct. 27, 1972, 47-107075
Int. Cl. B05b 15/06
U.S. Cl. 239—274 2 Claims

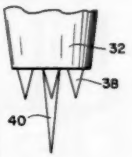


This invention relates to an improvement in a wall aerosol spray having a hanger attached to the cap body, which is suspended from or fixed on a pillar or a wall for spraying aerosol products for the purpose of deodorizing a lavatory or a compartment giving off an offensive smell.

3,809,320
CUTTING TORCH

Edwin K. Taylor, Oklahoma City, and James V. Boyd, Jones, both of Okla., assignors to Sooner Products Company, Bristow, Okla.

Filed Mar. 21, 1973, Ser. No. 343,193
Int. Cl. B05b 7/06
U.S. Cl. 239—416.4 5 Claims

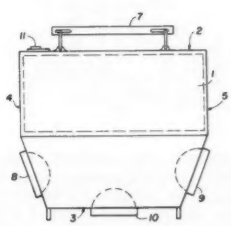


In conventional oxygen-fuel cutting torches there is a central orifice through which oxygen passes when the oxygen valve is opened, and there are a plurality of smaller orifices coaxial with the central orifice through which a controlled mixture of oxygen and fuel passes which provides a preheating flame to heat the work to a kindling temperature so that the oxygen will cause it to burn. This invention provides a controlled bypass means between the output of the mixer in which the fuel and oxygen are combined, to pass this mixture into the center orifice during the period the oxygen is not being used. Thus a larger central orifice is provided so that a large preheat flame is provided at the center of the torch.

3,809,321
FLASHLIGHT UNIT

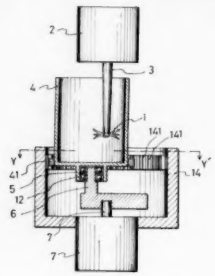
Sten I. Rundberg, Grand Valley, Colo., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed May 16, 1973, Ser. No. 360,792
Int. Cl. F21l 7/00
U.S. Cl. 240—10.63 2 Claims



A flashlight unit comprises a housing having upper, lower, front and rear sides. A battery is provided in the housing. A handle is mounted on the upper side of the housing. A plurality of lamps are mounted in the front, rear and lower sides. A multiposition switch in the housing has an actuating member at a side of the housing. A circuit in the housing connects the battery, the switch and the lamps in a manner whereby any desired combination of lamps is selectively actuated by the switch.

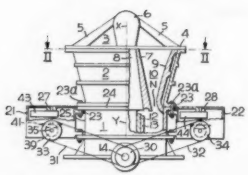
3,809,322
MIXER
Shigeo Hirosawa, 22-25 Nishikojiya 2-chome, Ohtaku, Tokyo, Japan
Filed Apr. 28, 1972, Ser. No. 248,484
Int. Cl. B02c 18/10
U.S. Cl. 241—46.17 8 Claims



A mixer devised to rotate an agitating container which is internally provided with a rotary agitating blade along a circular orbit while controlling said agitating container from self-rotation in its circumferential direction when said rotary agitating blade is rotated inside said agitating container.

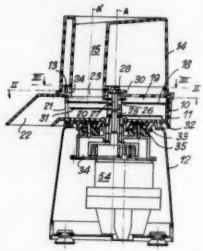
3,809,323
Patent Not Issued For This Number

3,809,324
GYRATORY CRUSHER WITH EXTERNAL DYNAMIC BALANCING ASSEMBLY
Eugene B. Cook, Appleton, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Nov. 10, 1972, Ser. No. 305,424
Int. Cl. B02c 2/04
U.S. Cl. 241—210 4 Claims



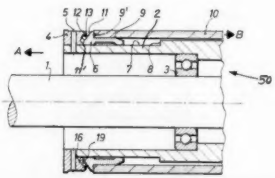
A gyratory crusher, with externally mountable dynamic balancing means, is disclosed having a lower frame, a stationary upright upper frame mounted on the lower frame, and a generally conical crushing head arranged within a concave mounted within the upper frame to define a crushing chamber between the concave and the head. The head is supported by the lower frame and driven to gyrate around a central axis through the upper frame. A pair of upright balance shafts are provided and arranged with one on each of opposite sides of the crusher and the balance shafts are driven to rotate in synchronism with the gyratory movement of the head around the axis of the concave. A pair of balance weights are provided with one balance weight attached to each balance shaft to rotate therewith. The balance weights each have a center of gravity offset from the balance shaft to counterbalance forces generated by the gyratory movement of the head about the upper frame axis.

3,809,325
FOOD-COMMINUTION DEVICE
Paul Marrie, Dijon, France, assignor to S.A.R.L. Etud, Zone Industrielle, Quetigny, France
Filed May 10, 1972, Ser. No. 251,970
Claims priority, application France, Dec. 30, 1971, 71.47501
Int. Cl. B02c 18/12
U.S. Cl. 241—278 R 8 Claims



A food chopper has a power base from which a drive shaft extends upwardly. A receptacle provided with a lateral outlet opening is mounted on this base and forms an upwardly open cylindrical chamber around the shaft. A replaceable cutting unit fits within this chamber and has levels, e.g. for cutting the foodstuffs and ejecting the cut product centrifugally or for two cutting stages. A cover formed with a vertical feed well fits over this unit and closes a safety switch which permits the motor in the base to operate.

3,809,326
BOBBIN SUPPORT CHUCK
Olivier Wust, Seuzach, Switzerland, assignor to Maschinenfabrik Rieter AG., Winterthur, Switzerland
Filed Oct. 19, 1972, Ser. No. 299,025
Claims priority, application Switzerland, Oct. 22, 1971, 15379/71
Int. Cl. B65h 75/32
U.S. Cl. 242—19 15 Claims



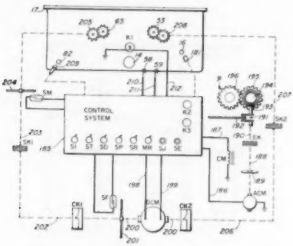
Bobbin support chuck with a thread severing zone defined by a thread severing ring and a thread inserting ring. The thread severing ring has a ring-shaped arrangement of cutting elements on its face. The thread inserting ring is located between the end face of the bobbin tube and the thread severing ring and has a substantially conical thread guiding surface which extends at least partially under the cutting elements when the bobbin tube is placed entirely on the chuck, and at which location there is provided thread clamping means.

3,809,327

FILM TRANSPORT SYSTEM FOR PHOTOGRAPHIC CASSETTE HAVING SELF-CONTAINED FILM PROCESSING SYSTEM

Martin S. Osman, Newton Highland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 17, 1972, Ser. No. 227,169
Int. Cl. G03d 5/00
U.S. Cl. 242—71 3 Claims



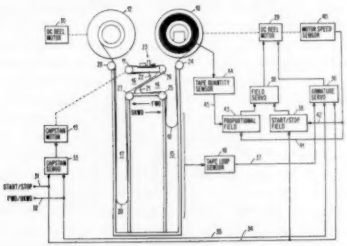
A film transport system for a film cassette comprising a strip of film and containing a film processing system. The transport system effects a programmed sequence of movements of the film by driving a reel to which the film is connected at constant linear speed relative to the processing system with a drive motor supplied with a control signal decaying at a predetermined rate.

3,809,328

FIELD AND ARMATURE CONTROL IN A REEL MOTOR SERVOMECHANISM

James R. Cope, Boulder, and Everette R. McCully, Northglenn, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 26, 1973, Ser. No. 344,795
Int. Cl. G11b 15/06, 15/58, 23/12
U.S. Cl. 242—184 14 Claims



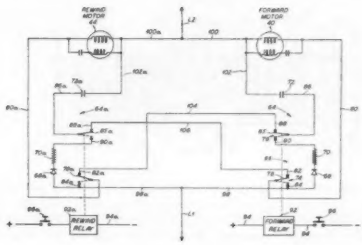
A magnetic tape unit having vacuum column buffers which isolate a centrally located, low inertia capstan from two variable inertia tape reels and their high inertia, direct current motors. Each of the reel motor armatures is servo controlled from tape loop sensing transducers associated with its particular vacuum column. This armature servo control provides speed and direction control of the reel motors. The electromagnetic reel motor fields are servo controlled to control the motor's torque/speed capability in accordance with the tape unit's operational mode. When initially accelerating the reel from a rest condition, the reel motor's field is high, to thereby increase motor torque at the expense of motor speed. Once the reel has been accelerated, the motor's field is decreased, to thereby increase the motor's speed capability at the expense of motor torque. Thereafter, the motor's torque/speed characteristic is controlled in accordance with the quantity of tape on the reel. Specifically, the motor's torque is decreased, by decreasing its field, as the reel empties.

3,809,329

TAPE TRANSPORT WITH AUTOMATIC TORQUE MOTOR BRAKE

John P. Jenkins, Towanda, Ill., assignor to International Tapetronics Corporation, Bloomington, Ill.

Filed Mar. 15, 1973, Ser. No. 341,769
Int. Cl. B11b 15/32; G03b 1/04
U.S. Cl. 242—204 5 Claims



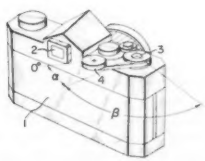
A tape transport having opposite ends of a recording tape wound upon reels driven by forward and rewind torque motors. Switch means for each motor is actuatable between first and second positions. In the first position the corresponding motor is connected to an alternating current power source to drive the motor in a tape winding direction, and a capacitor is connected in series with a rectifier and is charged by the alternating current power source. Subsequent actuation of the switch means to the second position deenergizes the winding motor and simultaneously discharges the capacitor through the unwinding motor to apply a braking load and thereby prevent looping and overrunning of the tape.

3,809,330

WINDING LEVER DEVICE IN A CAMERA

Tatsuya Taguchi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 11, 1973, Ser. No. 350,196
Claims priority, application Japan, Apr. 29, 1972, 47-43172
Int. Cl. G03b 1/06
U.S. Cl. 242—713 5 Claims



A winding lever device in a camera for easily varying an allowance angle of the lever whenever necessary is disclosed. The device provides a plurality of releasable connecting means for varying the winding starting position and springs for maintaining the winding shaft and said lever in connected condition.

3,809,331

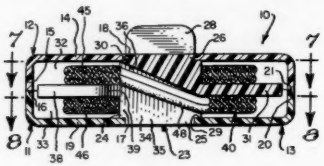
ELECTPIC CORD COILER

Robert G. Gaul, Altamonte, Fla., assignor to Paragon Wire & Cable Corp., Longwood, Fla.

Filed June 28, 1972, Ser. No. 267,244
Int. Cl. B65h 75/38
U.S. Cl. 242—100.1 10 Claims

An electric cord coiler comprising a hub member journaled on the spaced end walls of a hollow housing and carrying a

partition preferably in the form of an annular plate to partition the interior of the housing into two axially separated spaces, these spaces being joined by a diametrical passage in the hub member so that a portion of an electric cord intermediate its ends can be placed in such passage and the contiguous portions of the cord at opposite ends of such intermediate portion can be wound around the hub on opposite sides of the partition with the extreme outer end portions of the cord extending outwardly through openings in the side wall of the housing. The effective length of the electric cord from extremity to extremity can be changed by either unwinding some of the cord from the hub member or winding more thereon. The coiler is characterized by its simplicity, its minimum number of different parts, its ease of manufacture and its ready assembly.



3,809,332

PASSENGER VEHICLE SAFETY BELT LOCKING DEVICE

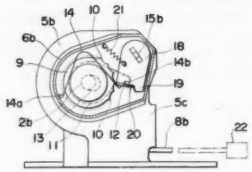
Yoshihiro Hayashi, Toyota, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi-ken, Japan

Filed July 13, 1972, Ser. No. 271,392

Claims priority, application Japan, July 13, 1971, 46-61574

Int. Cl. A62b *35/00*; **B65h** *63/00*

U.S. Cl. 242—107.4 **8 Claims**



A passenger vehicle safety belt locking device which comprises a reel having ratchet wheels for winding a belt, a bar member having a clutch plate and pawls for detecting the winding condition of the belt, a tongued disc shiftable to detachably contact the clutch plate, and a jumping cam operating the tongued disc so as to either engage or disengage with the clutch plate with respect to the direction of rotation of the shaft in order to permit either engagement or disengagement of the pawls with the ratchet wheels, whereby the belt can freely unwind from the shaft while the loose belt can automatically wind back onto the shaft.

3,809,333

DISPENSING CONTAINER FOR WIRE OR THE LIKE

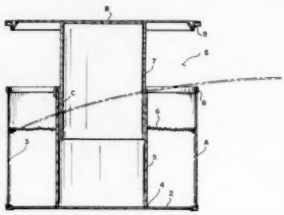
Richard M. Lefever, Springettsbury Twp., York County, Pa., assignor to Teledyne, Inc., Los Angeles, Calif.

Filed Apr. 3, 1972, Ser. No. 240,712

Int. Cl. B65h *49/00*, *55/00*

U.S. Cl. 242—129 **8 Claims**

A dispensing container for wire or the like comprising an open-topped receptacle, a lid for the receptacle adapted to close the receptacle to confine the contents of the receptacle and means for supporting the lid in a position spaced above the top of the receptacle to provide an annular space between the top of the receptacle and the lid through which to dispense the contents of the receptacle. The means for supporting the lid in a position spaced above the top of the receptacle comprise an element which is non-functional when the lid is in position closing the receptacle and which is disposable in lid supporting position when the contents of the receptacle are to be dispensed. The container may comprise an element vertically telescoping with a portion of the receptacle, which element carries the lid. The receptacle preferably has an inner vertical wall forming a core around which the contents of the receptacle are disposed and the element carrying the lid preferably telescopes with the inner vertical wall of the receptacle. The means for supporting the lid in a position spaced above the top of the receptacle may comprise a hook-like element hooking over the top of a portion of the receptacle and having a portion vertically supporting the lid. The hook-like element may hook over the top of the inner vertical wall of the receptacle and may have a portion underlying the element carrying the lid.



3,809,334

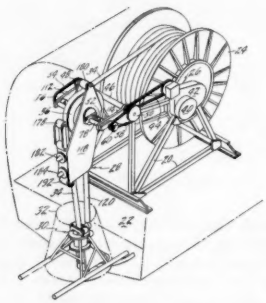
WINCH SYSTEM FOR HELICOPTER

Robert John Beurer, West Haven, and Philip Auriol Edgar Jeffery, Trumbull, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Nov. 6, 1972, Ser. No. 304,287

Int. Cl. B65h *54/28*, *75/34*

U.S. Cl. 242—158.3 **12 Claims**

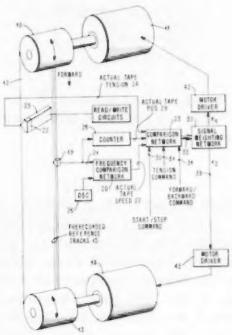


A cable winch for helicopter installation which has a guide sheave assembly utilizing a trunnion and carriage assembly for the guide pulley including a reaction bar and rollers to transmit the horizontal component of cable tension into the reaction bar, a reaction strut for supporting the guide sheave assembly and which is pivoted to follow traversing motion of the guide sheave assembly, a levelwind mechanism having a two-speed drive for traversing of the guide sheave assembly and automatic means for changing traversing speed during cable deploy or retrieval, and a load cell in the guide sheave assembly support for measuring cable tension.

3,809,335
WEB MOVEMENT CONTROL IN A REEL-TO-REEL WEB TRANSPORT

John P. Mantey, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1972, Ser. No. 267,301
Int. Cl. G11b *15/32, 15/52;* **B65h** *77/00*
U.S. Cl. 242—186 **9 Claims**



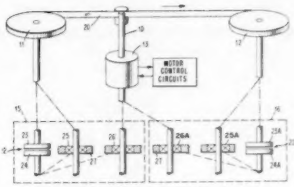
The acceleration/deceleration, speed, position and tension of a length of unbuffered magnetic recording tape running between the two reels of a reel-to-reel tape transport are accurately controlled by a reel motor control servomechanism which jointly controls the two reel motors in response to a plurality of reference signals and a plurality of error signals. A start/stop command controls tape movement. The start/stop command produces a characterized start/stop pulse which is successively integrated to generate an acceleration/deceleration reference signal, a speed reference signal and a position reference signal. A characterized tension command pulse is integrated to generate a tension reference signal. The characterized start/stop command pulse, the characterized tension command pulse, and the acceleration/deceleration, speed and tension reference signals are individually weighted for each of the two motors, the weighting being calculated to control the motors in a manner to achieve desired tape acceleration/deceleration, speed and tension parameters. The four reference signals, including position, are compared to like signals representing the actual value of these tape parameters. As a result of this comparison, four like error signals are generated. These error signals are individually weighted for each of the motors and then summed with the above-mentioned individually weighted reference signals. Each motor is controlled by five individually weighted reference signals (characterized start/stop, characterized tension, acceleration, speed and tension) and four individually weighted error signals (acceleration, speed, tension and position). Each signal is individually weighted for its particular motor.

3,809,336
TAPE TRANSPORT

Ernest P. Kollar, Broomfield; Joel M. Levine, Boulder; James M. Tagawa, Boulder, and Hui-Li Tiao, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 20, 1970, Ser. No. 82,396
Int. Cl. G11b *15/30, 15/43*
U.S. Cl. 242—202 **7 Claims**

A magnetic tape is transported by a capstan under constant tension provided by a driving-drag system connected to a pair of spools holding the tape. Constant torque, both drag and drive, is provided to both of the reels by a magnetic coupling. A pair of one-way clutches connected to the driving portion of the magnetic couplings provide braking and uniform tension

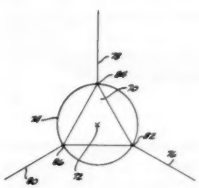


of the tape when a driving motor is stopped. Another pair of one-way clutches enable selective driving of the two reels by a single reversible motor. The motor also drives the capstan.

3,809,337
SPIN STABILIZED VEHICLE AND SOLAR CELL ARRANGEMENT THEREFOR

George J. Andrews, Los Angeles, and Harold A. Rosen, Santa Monica, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 886,332, Dec. 18, 1969. This application July 7, 1972, Ser. No. 269,643
Int. Cl. B64g *1/30*
U.S. Cl. 244—1 SS **2 Claims**



A spin-stabilized vehicle comprising (1) a body and (2) three deployable panels, arranged to present body and panel surfaces covered with photovoltaic or solar cells for increasing the stability and the sun derived power of the craft. The panels are stowed within or wrapped about the craft during ascent towards its utilizable position. When deployed, the panels extend radially from the craft. When extended, the panels are at least as long as the radius of the body. The use of three panels results in a relatively small ripple of the power supplied by the cells as the craft rotates and therefore a relatively high efficiency of cell utilization is provided.

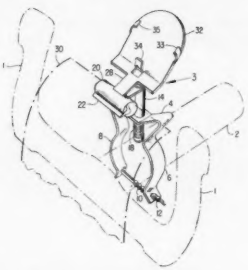
3,809,338
TIMER AND APPROACH PLATE HOLDER FOR AIRCRAFT

Edward L. Gross, Jr., 1327 Ward St., N.W., Warren, Ohio; William R. Pyne, 3271 Winchell Rd., Mantua, Ohio, and Donald L. Yauger, 1661 West Ave., Warren, Ohio

Filed Sept. 21, 1973, Ser. No. 399,284
Int. Cl. B64d *43/00*
U.S. Cl. 244—1 R **6 Claims**

A timer and approach plate holder for aircraft having a spring clip for mounting the holder on the horizontal shaft of the aircraft control yoke, and upwardly extending post bottomed on the shaft secured to the clip supporting at its upper

end an alligator clip having jaws spring urged toward each other for grasping an approach plate and a support for a timer



secured to the alligator clip forming a manually operable lever for opening the jaws for the quick and convenient insertion and removal of an approach plate.

3,809,339

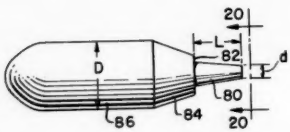
PROJECTILE WITH STING FOR REDUCING DRAG

Walter R. Sieling, 184 Woodbine Cir., New Providence, N.J., and Norman G. Ziesse, Cora Ln., Box D-8, Chester, N.J.

Filed Apr. 12, 1972, Ser. No. 243,313

Int. Cl. F42b *13/02*

U.S. Cl. 244—3.3 **10 Claims**



A rearwardly extending axial protuberance, known as a "sting," is secured to the base of a conventional projectile, such as a bullet or an artillery shell. The sting may assume a variety of configurations, such as cylindrical, frusto-conical, or combinations thereof, and can be utilized as a modification to be added to conventional projectiles, or can be fabricated as an integral part of a new series of projectiles. The sting causes a reduction in base pressure drag and thus lowers the rate of energy loss of the projectile in flight. Such reduction in drag increases the effective range of a bullet by enabling same to maintain a flatter trajectory; a comparable reduction in drag increases the maximum range of an artillery shell.

3,809,340

DEVICES FOR MOUNTING AN ENGINE ON AN AIRCRAFT PYLON

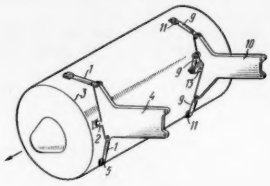
Andrei Emelyanovich Dolgy, ulitsa Ofitserskaya, 48; Jury Mikhailovich Balandin, ulitsa Gorkogo 167a, kv. 18, both of Zaporozhie; Viktor Vasilievich Shelepchikov, Leningradsky prospekt, 66 kv. 56, and Vladimir Ivanovich Shutov, ulitsa Zoi Kosmodemyanskoi 18, kv. 49, both of Moscow, all of U.S.S.R.

Filed Dec. 26, 1972, Ser. No. 318,037

Int. Cl. B64d *27/00*

U.S. Cl. 244—54 **1 Claim**

In the forward suspension plane relative to the flight direction, there are provided two struts and a trunnion therebetween. One end of each strut is pivotally connected to the aircraft pylon, while the opposite end of each strut is pivotally connected to the engine. In the rearward suspension plane relative to the flight direction, there are provided at least three struts one end of each being pivotally connected to the aircraft pylon while the other end is pivotally connected to the engine, a means for mounting the engine on the struts and



the trunnion being located laterally on the engine in such a way as to provide for a cantilever suspension of the engine on the aircraft pylon.

3,809,341

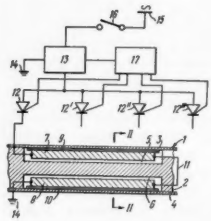
DEVICE FOR REMOVING ICE FROM SURFACES OF THIN-WALLED STRUCTURES

Igor Anatolievich Levin, Petrozavodskaya ulitsa, 15, korpus 1, kv. 113; Anatoly Yakovlevich Levin, ulitsa Stepana Supruna, 12, kv. 74; Nikolai Evstigneevich Fedorov, Volokolamskoe shosse, 6, kv. 213; Iosif Alexandrovich Rogov, ulitsa Vostrukhina, 7, kv. 80; Erik Eduardovich Afanasov, ulitsa Baumanskaya, 26, kv. 4, all of Moscow, and Eduard Grigorievich Turyansky, Noginsky raion, p/o Kupovka, ulitsa Matrosova, 11, kv. 52, Moskovskaya Oblast, all of U.S.S.R.

Filed Nov. 14, 1972, Ser. No. 306,554

Int. Cl. B64d *15/16*

U.S. Cl. 244—134 R **7 Claims**



Electric current pulses separated by time intervals are transformed into mechanical power pulses acting on a surface to be de-iced. A converter of electric current pulses is constituted by a pair of electrically connected conductors one of which mates intimately with the surface to be de-iced. The conductors are arranged in the area to be de-iced and disposed one beneath the other. The electric current flowing through the conductors cause their mutual repulsion or attraction whereby electric current pulses are transformed into mechanical power pulses thus causing an elastic deformation of the surface being de-iced and effecting the removal of ice from this surface.

3,809,342

PARACHUTE

Pierre Marcel Lemoigne, 103 Avenue Verdier, 92 Montrouge, France

Filed Sept. 29, 1969, Ser. No. 861,899

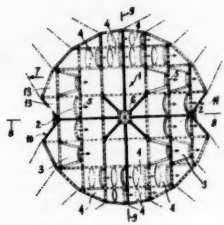
Claims priority, application France, Oct. 4, 1968, 68.168720

Int. Cl. B64d *17/02*

U.S. Cl. 244—145 **3 Claims**

The present invention relates to a parachute whose canopy includes means for imposing a directed flow of air from one surface thereof towards the other to produce a horizontal

component of translation and effect movement of the parachute along a longitudinal axis, and has at least one cut-out part extending in depth along said longitudinal axis from the edge of the canopy substantially to the marginal part of the



canopy which is substantially vertical when the parachute is in flight. The cut-out part may be provided in either or both of the leading edge of the canopy and the trailing edge of the canopy.

3,809,343

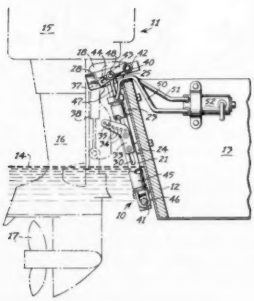
ELEVATOR BRACKET FOR OUTBOARD MOTOR

Crawford W. Adams, 963 Overton Lea Rd., Nashville, Tenn., and David T. Holt, deceased, late of Rt. 3, Goodlettsville, Tenn. (by Myrtle Holt, executrix)

Filed Jan. 8, 1973, Ser. No. 321,700

Int. Cl. B63h *21/26*; F16m *1/02*

U.S. Cl. 248—4 **9 Claims**



An elevator bracket adapted to be mounted upon the transom of a boat for lifting and tilting an outboard motor, including an upright guide member attached to the transom, a column reciprocably carried in the guide member and supporting a motor mounting head, a lift arm having its forward end journaled in the mounting head and extending rearward in engagement beneath a portion of the motor, a fluid-powered cylinder connected to the guide member, the reciprocable piston rod being pivotally connected to the rear portion of the lift arm, and stop guide means, so that actuation of the cylinder initially will lift the column, mounting head, lift arm and motor, without tilting the motor, until the stop means limits the upward movement of the column, and subsequently will swing the lift arm about its hinge connection to tilt the motor forward.

3,809,344

MOBILE DRILL RIG

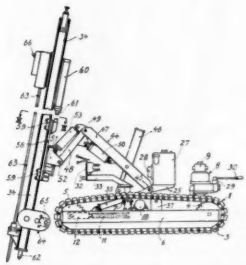
Edward Kolderup, Son, and Jacob Eidsmo, Drammer, both of Norway, assignors to Anlegg & Maskin A/S, Kolbotn, Norway

Filed Apr. 25, 1972, Ser. No. 247,267

Claims priority, application Norway, Dec. 8, 1971, 4522/71

Int. Cl. E21c *11/02*

U.S. Cl. 248—16 **10 Claims**



For a mobile drill rig of the caterpillar type it is proposed to mount the turntable on which the drill boom is pivoted, on a substantially vertical shaft placed substantially centrally within the vehicle and having a direct rack and pinion drive from two opposed hydraulic cylinders forming part of the connection between the chassis of the vehicle and the respective track frame structures. One of the track frame structures is rigidly connected to the chassis, and the other is capable of pivotal motion about the axis of the cylinders. The drill boom has a pivotal joint therein, permitting it to form an adjustable downward angle.

3,809,345

STAND FOR DECORATING A GRAVE WITH FLORAL ARRANGEMENTS

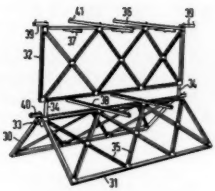
Rolf Tebbe, and Barend Huiden, both of 4330 Langenfeldstrasse 47, Muelheim-Ruhr, Germany

Filed Nov. 11, 1971, Ser. No. 197,830

Claims priority, application Germany, Nov. 11, 1970, 7041681; June 6, 1971, 2128892

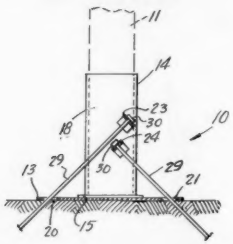
Int. Cl. A47g *7/00*

U.S. Cl. 248—27.8 **9 Claims**



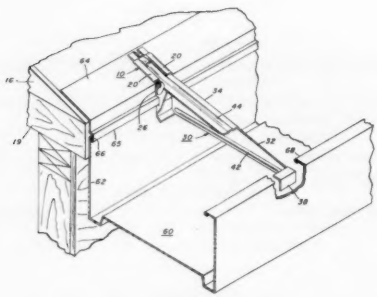
A stand upon which can be placed floral arrangements such as wreaths, sprays and the like for decorating a burial site such as a coffin, grave or tomb has at least two frames mutually connected so as to be positionable over the burial site, each of the frames having a surface for supporting the floral arrangements above the burial site.

3,809,346
FENCE POST SUPPORT
Robert B. Jackson, 410 S.W. 130th Ave., Beaverton, Oreg.
Filed Feb. 2, 1973, Ser. No. 328,970
Int. Cl. F16m *13/00*
U.S. Cl. 248—44 **7 Claims**



A fence post support resting on the surface of the ground and including a fence post receiving socket extending upwardly therefrom. A base plate underlies the socket. Drift pins are driven through angularly positioned brackets on the socket through slots in the base plate to enter the ground at an angle of about 45° to the vertical to lock the fence post support to the ground. Fence posts are supported in the fence post sockets to carry fencing in a conventional manner.

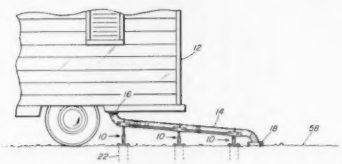
3,809,347
CLIP AND HANGER STRUCTURE FOR BUILDINGS
William R. Pekarek, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed Oct. 10, 1972, Ser. No. 296,122
Int. Cl. E04d *13/06*
U.S. Cl. 248—48.1 **4 Claims**



A clip and hanger structure for attachment to a building roof, and for disposal in interlocking engagement with each other at at least three locations in a high strength manner enabling the hanger and the structure supported thereby to withstand high upward and downward forces imposed thereon.

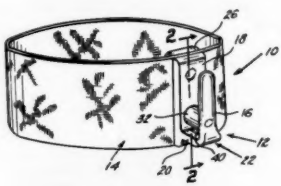
3,809,348
EXTERNAL WASTE PIPE SUPPORT STAND FOR TRAILERS
Ercole Thomas Di Laura, 105 Boone Trl., Severna Park, Md.
Filed Mar. 14, 1972, Ser. No. 234,514
Int. Cl. F16l *3/04*
U.S. Cl. 248—49 **3 Claims**

A new and improved support stand is provided to support and properly direct an external waste pipe from a mobile home, such as a portable or travel trailer, into the input of a sewer main. If required, two or more support stands can be used. Each support stand is constructed of telescoping tubular shafts. These shafts are adjustable in height and have tiltable troughs, with adjustable length extension bars connecting the



troughs. These troughs, in turn, support the external waste pipe from a travel or portable trailer or the like. The stands are held in an upright position by flat blocks resting upon the ground and are secured thereto by stakes. The support stand can readily be used with camping trailers, campers, travel trailers, and mobile trailers of all types.

3,809,349
CORD HOLDER
Dale E. Baedke, 2105 E. Maple St., Des Moines, Iowa
Filed Aug. 17, 1972, Ser. No. 281,433
Int. Cl. F16l *3/00*
U.S. Cl. 248—51 **2 Claims**

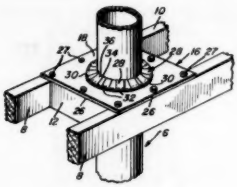


An electric cord supporting device or holder for use with manually operated equipment such as power tools, vacuum sweepers, electric lawn mowers and the like. This device embodies a hook or bracket type support through which the cord can be trained or reeved to keep it from dragging or becoming entangled with the mechanism to which it is attached or the workpiece involved or with the operator using the mechanism and is adapted in different embodiments to be worn on the operator's arm or belt or to be detachably or fixedly secured to a stationary support. A roller is preferably provided for engagement by the cord to facilitate the travel of the cord through this support or holder as the movements of the operator require.

3,809,350
VENT MOUNTING DEVICE
Byron D. Lane, 415 9th St., S.E., Minot, N. Dak.
Filed Aug. 14, 1972, Ser. No. 280,123
Int. Cl. F16l *5/00*
U.S. Cl. 248—57 **2 Claims**

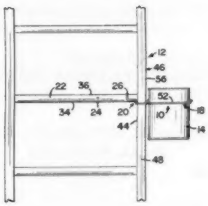
A readily applicable device for use when the user is called upon to install a sheet material vent pipe. It comprises a simple adapter plate having a central opening for insertable and adjustable passage of a conventional type vent pipe, the aper-

tured portion of said plate being encompassed by overhanging coordinating tabs. These tabs have upwardly flexed or canted



inner ends which are slightly resilient and which embrace and yieldingly as well as retentively engage that portion of the vent pipe surrounded thereby.

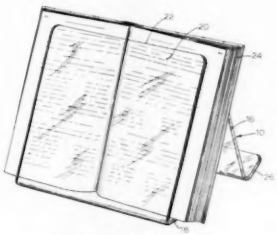
3,809,351
HOLDER
Ricardo Bravo, 2920 St. John, Tampa, Fla., and I. C. Street, 701 Hill Dr., Zephryhills, Fla.
Filed Dec. 26, 1972, Ser. No. 318,539
Int. Cl. E06c *7/14*
U.S. Cl. 248—210 **3 Claims**



A bracket of the type to be used in combination with a ladder so as to support a paint can or like container thereon so as to be readily excessible to a painter or the like positioned on the ladder. The bracket may be formed from a one piece element and include a container holder portion specifically configured to correspond to the shape of the container being supported. An attaching means is designed to engage a single rung and comprises at least two substantially arcuate shaped fingers arranged in opposed relation to one another and interconnected by an arm at the opposite extremities thereof such that the arm is disposed in an angular or non-parallel relation to the longitudinal axis of the rung. An interconnecting means engages a rail of the ladder and interconnects the attaching means to the holder such that the holder is supported adjacent the exterior surface of the rail at the approximate level of the rung which is engaged by the attaching means.

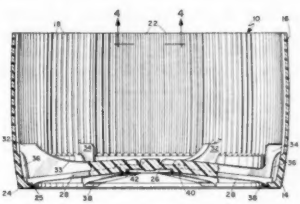
3,809,352
BOOK HOLDER AND SHIELD
Donald L. Mathias, 529 Madison Ave., York, Pa.
Filed Feb. 8, 1973, Ser. No. 330,568
Int. Cl. A47b *97/04*
U.S. Cl. 248—451 **2 Claims**

A book holder formed preferably from a sheet of transparent synthetic resin of suitable thickness to render it relatively stiff and including a book-supporting panel disposed at an acute angle relative to a supporting surface such as a table or the like, a bracing panel extending angularly rearward and downward from the upper edge of the supporting panel, and a transparent holding and viewing panel spaced sufficiently from the book-supporting panel to accomodate a book in open condition and overlying the exposed pages of the book to render the same visible and prevent contact of the surfaces of the pages by any extraneous material. The book-supporting and transparent holding and viewing panel form a slot to receive a book in open condition, the lower edges of the two



panels being connected by a short section of the material comprising a ledge upon which the lower edge of the book rests, and the lower edge of the supporting panel also preferably being bent smoothly outward to form a flange capable of serving as an additional book supporting ledge in relation to the bracing panel.

3,809,353
PROTECTIVE CAP FOR DIVER'S AIR TANK
Richard R. Good, 3142 Larga Ct., San Diego, Calif., and Alan K. Uke, K-14 Muir Apt., San Diego, Calif.
Filed June 14, 1972, Ser. No. 262,482
Int. Cl. B63c *11/22*
U.S. Cl. 248—346.1 **8 Claims**

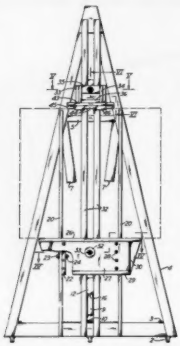


A protective lower end cap for a diver's compressed air tank, which acts as a secure base to stand the tank upright. The interior of the protector has a ribbed wall which grips the circumference of the tank firmly but with minimum contact area, the ribs allowing water to pass through freely, so that the protector can remain on the tank at all times. A multi-armed open base portion supports the lower end of the tank clear of the surface in which the tank stands. The exterior of the protector is smooth, without protuberances, and will not cause injury to the diver.

3,809,354
ARTIST'S EASEL
William M. Phifer, 5522 Centre Ave., Pittsburgh, Pa.
Filed Oct. 13, 1972, Ser. No. 297,343
Int. Cl. A47b *97/04*
U.S. Cl. 248—449 **8 Claims**

An easel frame extends upwardly from the front of a base and carries a pair of laterally spaced parallel rails that extend up and down the frame. Extending across the front of the rails is a picture-supporting shelf supported by parallel bars extending along the sides of the rails. Releasable fastening members

extend through these bars and through longitudinal slots in the rails for clamping the bars to the rails at any desired level so that the shelf can be adjusted up and down the rails. A clamp for the top of a picture is adjustable up and down another pair of rails between the first pair.

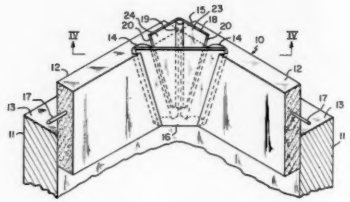


3,809,355

HOT TOP MAINTAINING SYSTEM FOR AN INGOT MOLD

George Rocher, Pittsburgh, Pa., assignor to Metallurgical Exoproducts Corporation, McKees Rocks, Pa.

Filed Sept. 25, 1972, Ser. No. 291,655
Int. Cl. B22d 7/10
U.S. Cl. 249—106 **4 Claims**



The improved hot top maintaining system permits disposable hot top sideboards to extend above the ingot mold. A chill wedge is used in combination with a wedge plate positioned within converging grooves of adjacent sideboards. The chill wedge, after insertion, is flush against the wedge plate and the adjacent sideboards and provides a chill zone at the sideboard juncture so as to immediately solidify the metal and retain it within the hop top system.

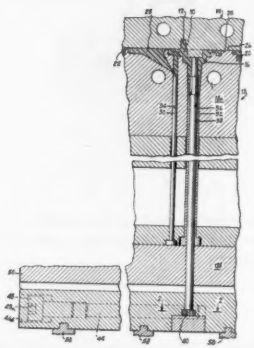
3,809,356

MOLDING DIE BLOCK

John S. Doyel, 404 W. 20th St., New York, N.Y.

Filed Sept. 6, 1972, Ser. No. 286,717
Int. Cl. B28b 7/02
U.S. Cl. 249—155 **4 Claims**

A die block for molding an object wherein the improvement is in means for changing the configuration of an object molding cavity without removing the die block from its supports and without remachining the cavity. The cavity configuration change is effected by providing a die shaft having a shaped forward end extending partly into the cavity and having a back end provided with a gear meshing with the gear at the forward end of an adjusting shaft whose back end is accessible through a side wall of the die block. The arrangement allows rotating the die shaft by means of the adjusting shaft.

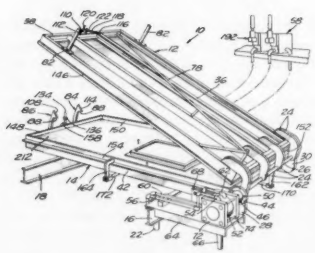


3,809,357

MOLD FOR FORMING A LAMINATED PLASTIC PANEL

Francis Gallap, Van Nuys, Calif., assignor to Exhibit Homes, Inc., Van Nuys, Calif.

Filed Apr. 23, 1970, Ser. No. 31,129
Int. Cl. B41b 11/56
U.S. Cl. 249—161 **7 Claims**



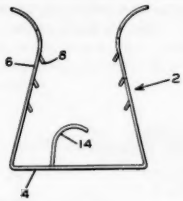
A building construction element having a central core of rigid plastic foam with each outer planar surface formed of a glasslike layer of hard plastic material. A method of forming a building construction element by locating a layer of foamable plastic material in the uncured state between thin films of uncured glass fibrous resinous material, confining the combined resinous films and plastic layer, permitting heat energy that is generated chemically within the resinous films to be transferred to the layer of plastic material causing such to foam and cure into a rigid material, permitting heat energy generated by the foaming procedure to be transferred to the resinous films causing such to become a solid glasslike material, bonding the glasslike resinous films to the layer of foamed plastic. A mold for producing sheetlike building construction elements employing first and second separable mold parts with the edge producing portion of the mold being movable with respect to the first and second mold parts.

3,809,358

CEILING SYSTEM SUSPENSION CLIP AND RUNNER

James E. Hazeley, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Apr. 12, 1972, Ser. No. 243,270
Int. Cl. F16l 3/00
U.S. Cl. 248—317 8 Claims



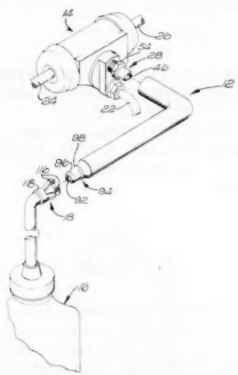
A U-shaped clip is fastened directly to the ceiling joists. Into the clip is inserted a simple runner member to which is fastened the ceiling tile. The simplicity of the invention exists in the fact that the clip is fastened directly to the ceiling joists and no complicated suspension system is needed for the ceiling.

3,809,359

BLEEDING TOOL FOR HYDRAULIC BRAKE CYLINDER

Edward L. Truelove, Sr., 14836 Callahan St., Panorama City, Calif.

Filed Jan. 11, 1973, Ser. No. 322,667
Int. Cl. F16k 51/00
U.S. Cl. 251—148 7 Claims



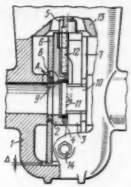
A bleeding tool for loosening as well as removing gases from an external bleeding member of a hydraulic brake cylinder. The tool contains a generally hollow interior defining a passageway for fluid therethrough. The front end of the tool is formed of a socket member for loosening the bleeding member and enabling the fluid to pass from the brake cylinder through the passageway. The rear end of the tool contains an interconnection device for removing fluid from the passageway. A resilient member is positioned in the tool interior adjacent a front end thereof and has a bore surface therethrough defining a continuation of the tool passageway. A tubular member interconnects the bore surface of the resilient member with the tool passageway. A spring positions the resilient member adjacent the bleeding member for enabling the resilient member to provide a seal between the tool and the bleeding member, thus enabling fluid to pass directly from the bleeding member to the passageway without leakage.

3,809,360

FLAT DIRECT-FLOW GATE VALVE

Nadir Asker Ogly Radzhabov, Ulitsa Ryleeva 36-a, kv. 3, Baku, U.S.S.R.

Filed Apr. 23, 1973, Ser. No. 353,613
Int. Cl. F16k 3/10
U.S. Cl. 251—196 2 Claims



The gate valve comprises a flow control assembly including a gate member made up by two identical parts, the gate member being mounted between two shields associated with seats and rolling-contact guides.

Each guide includes a spherical retaining means and a smoothly narrowing slit between the internal edges of the parts of the gate member, at both sides of the latter.

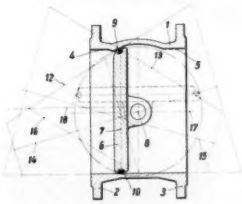
With the gate member being in either of the two extreme working positions thereof, the spherical retaining means is positioned in the respective narrowing portions of the slit, biasing the two identical parts of the gate member apart and pressing them against the respective seats of the flow control assembly of the gate valve.

3,809,361

SHUTOFF VALVE

Karl Pfundstein, Frankenthal, and Erich Fallert, Mannheim, both of Germany, assignors to Bopp & Reuther GmbH, Mannheim-Waldhof, Germany

Filed Aug. 15, 1972, Ser. No. 280,887
Claims priority, application Germany, Apr. 27, 1972, 2220584
Int. Cl. F16k 1/226, 25/00
U.S. Cl. 251—305 9 Claims



A shutoff valve is formed of a valve body defining a passage. A valve member has a substantially oval disk-shaped portion and an elastic sealing ring extending around the periphery of the disk-shaped portion.

The disk-shaped portion is mounted for movement about a pivot axis extending across said passage. The valve body has a valve seat located in the flow passage in a predetermined plane and to one side of the pivot axis. The valve seat has a surface which includes a pair of first surface portions located near the opposite ends of the pivot axis at one side of the axis and lying on a first imaginary conical surface having its vertex located at one side of said plane. The valve seat surface includes a pair of second surface portions located near the opposite ends of the pivot axis at the other side of the axis and lying on a second imaginary conical surface whose vertex is

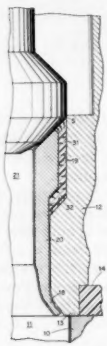
located at the other side of the valve seat plane. The valve member is pivotable about the axis between an open position and a closed position in which the sealing ring is wedged against the first and second surface portions of the seat surface.

3,809,362

HIGH PRESSURE SOFT SEAT VALVE

Hans D. Baumann, Foxboro, Mass., assignor to Masoneilan International, Inc., Norwood, Mass.

Filed Mar. 13, 1972, Ser. No. 234,124
Int. Cl. F16k *1/12*
U.S. Cl. 251—332 **7 Claims**



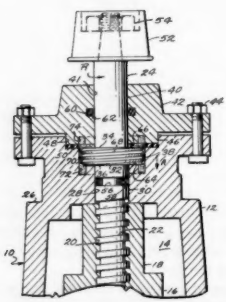
Valve for tight shutoff of high pressure fluid flow having a deformable plastic element arranged between the valve plug and seat means to be highly pressured by the valve closing and thereby to set up a wear-free barrier seal.

3,809,363

GATE VALVE STEM THRUST COLLAR LUBRICATION

Robert L. Rhodes, Hixon, Tenn., assignor to Mueller Co., Decatur, Ill.

Filed Apr. 3, 1973, Ser. No. 347,363
Int. Cl. F16k *41/02*
U.S. Cl. 251—355 **8 Claims**



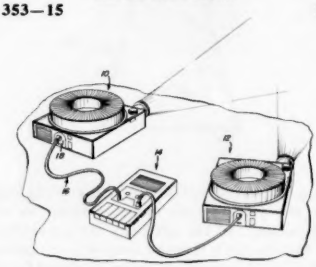
A non-rising stem type of valve assembly utilizing a closed lubricant chamber or reservoir for the thrust collar on the valve stem. Means are provided for replenishing the lubricant to the bearing surfaces of the thrust collar and the reservoir during each operation of the valve, the means including pumping or forcing lubricant between the bearing surfaces of the thrust collar and of the closed lubricant reservoir in either direction depending on rotation of the valve stem. The lubricant may either be forced as a film between the surfaces of the collar and the lubricant reservoir which are about to mate or are separating.

3,809,364

CASSETTE-SLIDE SYNCHRONIZER

James W. Redemann, 1368½ Cherry St., Green Bay, Wis.

Filed Dec. 18, 1970, Ser. No. 99,477
Int. Cl. G03b *31/06*
U.S. Cl. 353—15 **11 Claims**



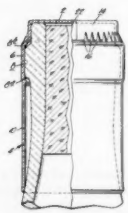
Operation of the slide advancing mechanisms in one or more slide projectors is automatically controlled by signals from a cassette-type of tape recorder and player. Conductive strips are mounted on the tape stored in the cassette in order to generate the slide advancing signals when the strips bridge contact surfaces on spaced guide posts in contact with the tape. The signals are conducted by a plug-in cable from the posts to each slide projector.

3,809,365

PROTECTIVE CAP OF SYNTHETIC MATERIAL FOR MOUTHS OF CONTAINERS, PARTICULARLY CORKED WINE BOTTLES

Herbert Loffler, No. 37, 5581 Tellig, Germany

Filed June 21, 1971, Ser. No. 155,198
Int. Cl. B65d *41/02*
U.S. Cl. 215—38 R **3 Claims**



For a container having an open end and a radially outwardly projecting ridge on the exterior of the neck and spaced downwardly from the open end thereof defining a pair of radially spaced rims, a closure cap of resilient flexible material comprising a top overlying the open end of the container, a skirt depending from the outer peripheral edge of the top, fracturable means connecting the top to the skirt to permit removal of the top, said skirt having a circumferentially extending section of greater cross section and of an axial depth greater than the ridge on the container neck said section having an internal diameter slightly less than the outside diameter of the ridge on the container, means defining a circumferential groove in said thickened section of said skirt spaced from the

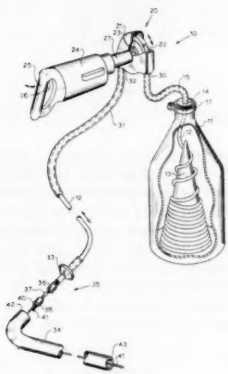
top a predetermined distance so that it engages the lower rim of the ridge when the top is seated on the axial end face of the container, the outer portion of the thickened section extending beyond the rims of the ridge to hold the cap in place on the container.

A protective cap of synthetic material, with a substantially cylindrical shell and a seal plate, for closed container mouths having an outer ridge (band), in particular for corked wine bottles, characterized in that the shell has at its inside a substantially cylindrical thickening, which, when the protective cap is set on the mouth opening, extends over the rim of the ridge turned away from the mouth, and in that the inner width of the thickened shell section is smaller than the outer diameter of the ridge or band.

3,809,366
APPARATUS FOR DRAWING CONDUCTOR WIRES THROUGH CONDUITS

Silas Ray Crees, P.O. Box 813, Eau Gallie, Fla.

Filed Apr. 26, 1973, Ser. No. 354,490
Int. Cl. E21c *29/16*
U.S. Cl. 254—134.3 FT **9 Claims**



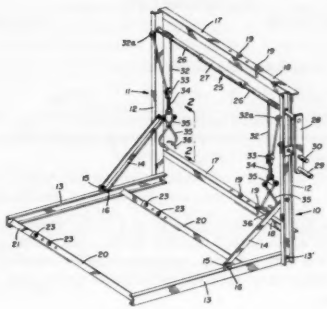
A power driven tool for driving a flexible plastic rod or tube through a conduit for connection to a conductor wire and then pulling the flexible rod or tube with conductor wire attached thereto through the conduit. The flexible rod is driven by a rotatable friction drive such as a pulley or spiralling pulley in which the rod is wrapped around and driven through a flexible guide conduit for guiding the rod into an electrical conduit. A storage container is provided with a cone spool for storing the flexible rod.

3,809,367
TRACTOR HOIST

Clayton G. Bower, R.F.D. 2, Republic, Ohio

Filed Nov. 24, 1972, Ser. No. 309,216
Int. Cl. B66c *23/60*
U.S. Cl. 254—144 **8 Claims**

A hoist having laterally spaced L-shaped frame elements connected by upper and lower cross bars, one upper cross bar being a rotatable shaft. Reeling cables or the like attached to the shaft have detachable clamping means to connect to the

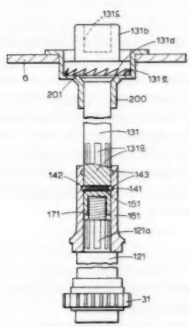


front wheels of a tractor positioned within the frame with its rear wheels abutting a lower transverse connector bar for tilting the tractor upwardly about the rear wheels.

3,809,368
MARINE WINCH

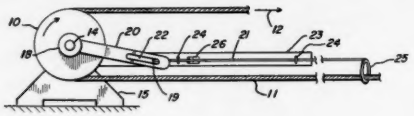
Christopher John Lawrence, London, England, assignor to Knowsley Engineering Limited, Manchester, England

Filed Mar. 2, 1973, Ser. No. 337,458
Claims priority, application Great Britain, Mar. 7, 1972, 10563/72
Int. Cl. B66d *1/30*
U.S. Cl. 254—150 R **3 Claims**



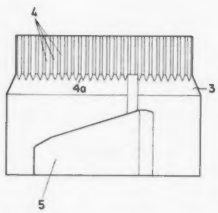
The invention provides a marine winch driven by a central operating spindle coupled at its lower end to drive reduction gearing in turn coupled to an outer casing of the winch to rotate said casing at one of two alternative output ratios selectable on rotating the operating spindle in opposite directions. The operating spindle has a separate upper portion movable vertically relative to a lower portion and in splined driving engagement therewith. When the upper part of the operating spindle is lowered it is coupled directly to drive the outer casing so as to provide a third, 1:1, output ratio. Unidirectional stepless clutch means are provided in the drive lines to enable the three output ratios to be acheived and also to enable the outer casing to over run.

3,809,369
SAFETY RELEASE APPARATUS
John W. Elsing, 7202 Shannon Dr., Edina, Minn.
Filed Dec. 26, 1972, Ser. No. 318,531
Int. Cl. B66d 1/48
U.S. Cl. 254—173 R 11 Claims



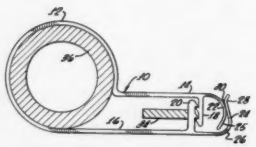
Apparatus for releasing a rope from a pulley upon sensing the proximity of an object attached to the rope, particularly adapted for use with a ski rope tow apparatus for stopping the rope tow when a skier approaches too close to the rope tow return pulley.

3,809,370
BOTTLE CAP SEAL
Jesus Diaz Sugasaga, 49, C. Carretera Monte, Santander, Spain
Filed May 23, 1972, Ser. No. 256,104
Int. Cl. B65d 43/02
U.S. Cl. 215—42 2 Claims



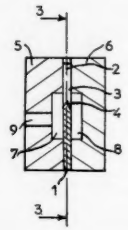
A cap-seal unit to be mounted on the neck of a bottle, which comprises a seal member adapted to be disposed on the neck of a bottle and having circular ribs on its surface in order to retain the seal member. A truncated cone strip is equipped with a progressively weakened wall, until reaching a skirt, for holding together the cap-seal unit. A wall is disposed concentric to the skirt, said skirt being arranged partly inside of the neck of the bottle. A flange extends from the lateral surface of the cap-seal unit, so that upon pulling the weakened wall and seal is separated from the cap.

3,809,371
TENSION BAND
Leo J. Martini, South Gate, Calif., assignor to Master Fence Fittings, Inc., La Habra, Calif.
Filed June 29, 1973, Ser. No. 375,118
Int. Cl. E04h 17/04
U.S. Cl. 256—47 12 Claims



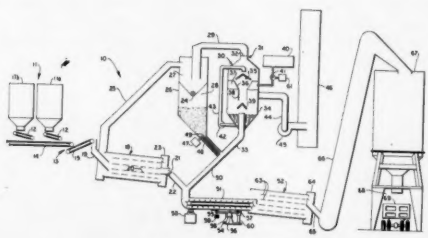
A tension band for retaining a chain link fabric stretcher bar to a support post for maintaining fence fabric under tension. The tension band comprises a loop portion for engaging the support post and two leg portions extending therefrom. Interlocking means are provided on the two leg portions and these interlocking means are forced into engagement by the resilient camming action of biasing means when the leg portions of the tension band are squeezed together.

3,809,372
DEVICES FOR THE GENERATION OF ULTRASONICS AND THEIR APPLICATION TO THE PREPARATION OF EMULSIONS
Louis Duthion, Paris; Claude Charles Doyotte, Le Plessis Robinson; Claude Jean-Marie Seguela, Argenteuil; Gabriel Barthelemy, Paris; Alain Cinquanta, and Yves Drapeau, both of Le Havre, all of France, assignors to Compagne Francaise De Raffinage, Paris, France
Filed Sept. 5, 1972, Ser. No. 286,061
Claims priority, application France, Sept. 3, 1971, 71.31975; Dec. 20, 1971, 71.45738; June 27, 1972, 72.23201
Int. Cl. B01f 3/08, 5/06
U.S. Cl. 259—4 24 Claims



A device for generating ultrasonic waves in a fluid preferably used in emulsifying water and fuel oil and the like constructed of two side plates (each having at least one recess, occurring in adjacent pairs) and a thin steel membrane disk having a liquid access groove (discontinuities) cut out of said disk and extending into said recess such that the remaining portion of the membrane disk extending across each recess pair vibrates (preferably resonates) in the liquid flowing through said groove and into one of said recesses to pass out a discharge conduit extending from the base of such recess.

3,809,373
ASPHALT PREPARATION PLANT
James Donald Brock, Chattanooga, Tenn., assignor to CMI Corporation, Oklahoma City, Okla.
Filed Mar. 10, 1972, Ser. No. 233,478
Int. Cl. B28c 7/04
U.S. Cl. 259—154 5 Claims



A continuous flow of aggregate is passed through a drying chamber and a flow of heated air is passed through the drying chamber to heat and dry the aggregate and to remove dust

particles from the aggregate. The heavier and larger dust particles are separated from the air flow and accumulated, and the lighter and smaller dust particles in the air flow are charged with an electrostatic charge. The air flow with the charged dust particles is washed with hot bituminous liquid to coat the lighter dust particles with the liquid so that the dust particles are separated from the air flow and combined with the liquid flow. The flow of hot bituminous liquid, a flow of heavier dust particles, and the flow of hot dry aggregate are combined and the combined elements are conveyed to a mixer. The flows of hot bituminous liquid and dust are regulated in response to the weight of combined mix flowing toward the mixer.

3,809,374

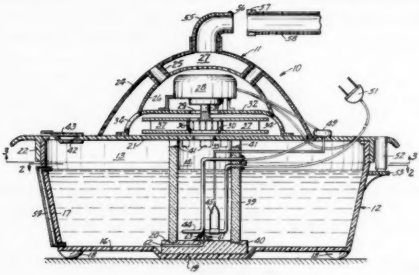
VAPORIZER-HUMIDIFIER

George W. Schossow, 2316 Lilac Ln., White Bear Lake, Minn.

Filed June 11, 1969, Ser. No. 832,279

Int. Cl. F24h *1/06;* **A61m** *11/00*

U.S. Cl. 261—130 **8 Claims**



A vaporizer-humidifier having a small insulated vaporization chamber within a larger storage chamber, heating means within the vaporization chamber and a fan above the chamber for drawing air through and vapor from the vaporization chamber and dispelling it. The vaporization chamber is constructed to be self-cleaning, to permit control of the temperature of the exiting moist air, and to minimize the chance of burns.

3,809,375

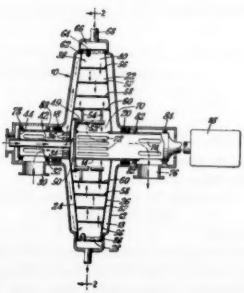
ROTARY FLUID CONTACTOR

Frederick W. Bonnet, Tonawanda, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Nov. 16, 1967, Ser. No. 684,599

Int. Cl. B01d *47/16*

U.S. Cl. 261—87 **15 Claims**



This invention concerns the improvement of mass transfer between fluids in rotary contactors useful, for example, in distillation, adsorption and liquid-liquid extraction. Method and means are provided whereby a heavier fluid, being conducted in a generally radially outward direction under a centrifugal driving force, is caused to flow circumferentially across the contacting zone in a direction opposed to the direction of rotation of the contactor, while the lighter fluid is conducted in a generally radially inward direction through the contacting zones by a radial pressure gradient in the rotary contactor.

3,809,376

METAL FACTORY WITH AT LEAST ONE TILTABLE CONVERTER

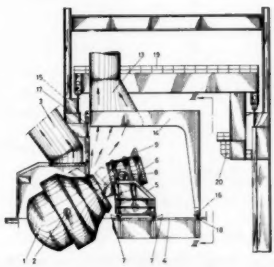
Nico Plazier, Castricum, Netherlands, assignor to Hoogovens Ijmuiden B.V., Ijmuiden, Netherlands

Filed Nov. 17, 1972, Ser. No. 307,375

Claims priority, application Netherlands, Nov. 17, 1971, 7115853

Int. Cl. C21c *5/40*

U.S. Cl. 266—16 **4 Claims**



A factory for the conversion of metal is provided which contains at least one tiltable metal converter, machinery for supporting, displacing and tilting either ladles for molten metal or charging boxes for scrap metal which are used to charge the converter, exhaust means for the converter during its normal operation, which exhaust means include hood means extending over the entire opening of the converter when in a tilted position during the charging of the converter with metal to be processed for carrying away and exhausting vapors, dust and the like that are present above the converter opening during the charging of the converter while in a tilted state, thereby providing a work area which will be substantially free of material hazardous to the health of the operator during such charging. The hood means further are movable transversely to the plane of the tilting movement of the charging vessel.

3,809,377

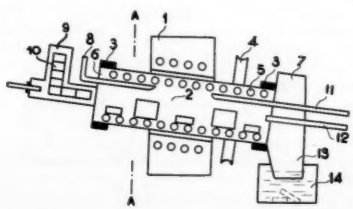
ROTARY VESSEL FURNACE

Chryzant Lesniak, ul. 18-ego Sierpnia Blok C, m. 9, and Edmunt Bryjak, 6 ul. Harcersta 2, both of Katowice, Poland

Filed Dec. 22, 1972, Ser. No. 317,698

Int. Cl. C21d *1/12*

U.S. Cl. 266—18 **5 Claims**



Rotary vessel furnace for the chemical heat treatment of metals and alloys, including a rotatable cylindrical retort

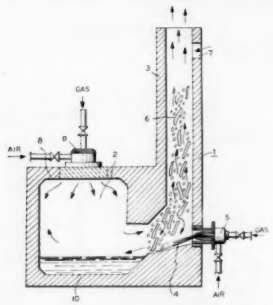
adapted to receive said metals or alloys and a gaseous material-treating medium, said retort having a coil extending along and in proximity to the inner circumferential surface thereof so as to prevent contact between the retort wall and the material being chemically heat treated.

3,809,378

NON-FERROUS METAL MELTING FURNACE

Hirofumi Iida, Chiba, Japan, assignor to Tokyo Gas Company Limited and Nippon Crucible Company Limited, both of Tokyo, Japan

Filed Aug. 17, 1972, Ser. No. 281,502
Claims priority, application Japan, Aug. 21, 1971, 46-75151
Int. Cl. F27b *19/04*
U.S. Cl. 266—33 R **2 Claims**



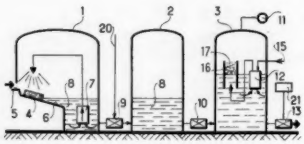
A non-ferrous metal melting furnace in which a primary melting chamber is formed at the lower portion of an exhaust flue and a high velocity burner is provided in the wall of said primary melting chamber. The primary melting chamber opens into a secondary melting chamber. Metal charged into the primary melting chamber is rapidly half-melted therein by direct contact with the combustion gas discharged from said burner, and the half-melted metal is introduced into the secondary melting chamber wherein it is completely melted by radiant heat from a burner mounted in the roof of said secondary melting chamber.

3,809,379

INSTALLATION FOR THE TREATMENT AND MOVEMENT OF LIQUID METALS

Henri Carbonnel, Antony, and Jean-Paul Le Frere, Villejuif, both of France, assignors to Groupement Atomique Alsacienne Atlantique, Le Plessis Robinson, France

Continuation-in-part of Ser. No. 136,078, April 21, 1971, abandoned. This application June 27, 1972, Ser. No. 266,800
Claims priority, application France, Apr. 21, 1970, 70.14468; Apr. 7, 1971, 71.12355
Int. Cl. C21c *7/10*
U.S. Cl. 266—34 V **10 Claims**



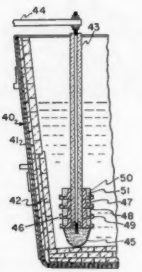
An installation for the treatment and movement of liquid metals prior to casting, comprising, in succession, at least one metal smelter, involving an electromagnetic pump which forces back metal being smelted toward the solid metal inserted into the furnace; at least one ladle for keeping the metal in the liquid state, at least one degassing furnace, which supplies at least one work station and which involves an electromagnetic metal stirring pump. Electromagnetic or similar pumps are used for moving the liquid from the smelter to the ladle, degassing furnace and work station. This installation is particularly useful for treating and moving aluminum, zinc and magnesium.

3,809,380

APPARATUS FOR LADLE ADDITIONS

George Rocher, Pittsburgh, Pa., and Pierre Andre Vayda, Burlington, Ontario, Canada, assignors to Metallurgical Exoproducts Corporation, McKees Rocks, Pa.

Filed May 7, 1973, Ser. No. 358,263
Int. Cl. C21c *7/00*
U.S. Cl. 266—34 T **8 Claims**



A ladle for receiving molten metal is equipped with an elongated refractory lined rod having an enlarged bottom portion which terminates at the lower end of the ladle. A container assemblage is positioned and maintained about the rod and includes containers, each having an enlarged mass portion adjacent the rod and a containing arm extending outwardly therefrom. An addition agent is maintained on the containers through individual upstanding cardboard liners positioned adjacent a peripheral lip of the container arms or by means of a large cardboard and/or steel liner in which the containers are stacked so that the drum forms the outer boundary for the containers. The assemblage can also be a solid cylindrical addition agent such as aluminum encapsulated in a cardboard and/or steel liner. A wedge system can be employed with the container assemblage to hold it in place about the refractory lined rod.

3,809,381

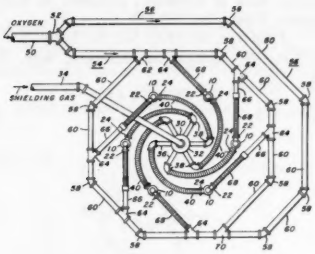
LIME OXYGEN-NATURAL GAS DISTRIBUTION SYSTEM

Raymond C. Stephan, Gary, Ind., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed July 10, 1972, Ser. No. 271,094
Int. Cl. C21c *5/48*
U.S. Cl. 266—35 **5 Claims**

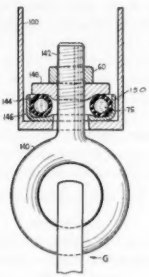
A distribution system for supplying an oxygen-lime mixture to the tuyeres in a bottom blown steel refining vessel having a closed continuous oxygen-lime feed line encircling said tuyeres below the vessel bottom, and a plurality of individual conduit means to convey the oxygen-lime mixture from the closed continuous feed line to the individual tuyeres. In order

to maintain a substantially uniform oxygen pressure and lime feed rate to each tuyere, the closed continuous feed line is



provided with at least two inlet means uniformly spaced along said closed continuous feed line for supplying fresh oxygen-lime mixtures thereto.

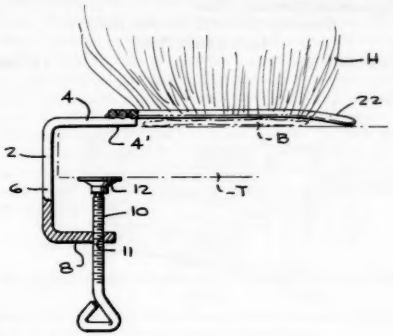
3,809,382
FLUID THRUST DEVICE
Karl A. Pamer, Chagrin Falls, Ohio, assignor to McNeil Corporation, Wickliffe, Ohio
Filed June 9, 1972, Ser. No. 261,377
Int. Cl. B60g *1/26*
U.S. Cl. 267—65 A **7 Claims**



A thrust device comprising a discrete, entirely resilient and flexible, closed vessel filled with liquid.

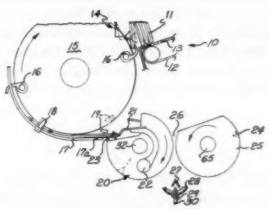
3,809,383
WIGLET HOLDER
Matha C. Ptacek, 1802 Wood Valley Rd., Macon, Ga.
Filed July 24, 1972, Ser. No. 274,298
Int. Cl. A45d *8/00, 44/14*
U.S. Cl. 269—91 **8 Claims**

A wiglet holder is disclosed in the form of a fork comprised of a plurality of U-shaped members each including base member having first and second tines extending forwardly with the respective U-shaped members having different length base members and connected to a supporting member



clamped to a table or the like with the tines extending forwardly in parallel relation to receive and retain a wiglet for combing and styling.

3,809,384
SADDLE GATHERING MACHINE
Victor A. Zugel, Parma, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed July 13, 1972, Ser. No. 271,488
Int. Cl. B65h *39/02*
U.S. Cl. 270—54 **13 Claims**



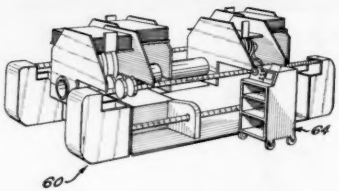
Rotatable transfer drum removes signatures by their folded edges one at a time from a hopper and presents them to a supporting plate with their open ends extending beyond one edge of the plate. The first of a pair of rotatable signature opener drums is arranged to take the open end of each signature lying on the plate in such a fashion that a fairly sharp bend is put in the open end, thus enabling easy signature opening when the outer side is released for taking by a vacuum gripper on a second opener drum. The first opener drum is provided with long gripper fingers, short gripper fingers, and one or more vacuum grippers, for handling different types of signatures having high and low folio laps or no lap at all. The gripper fingers are operated by stationary cams on one side of the first opener drum, and a vacuum line to the vacuum gripper is provided at the opposite side of the drum and is connected to the rotor of a timing valve. The cams are coaxial with the opener drum and are held fixed in position by means of a stationary bracket extending radially from a frame member to the cams. Tamper plates or paddles are provided to engage signatures on the plate to provide a temporary steadying support when the grippers initially take hold of the open ends of signatures.

3,809,385

METHOD AND APPARATUS FOR OFF-LINE MAKE-READY

Victoriano F. Rana, Easton, Pa., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed Sept. 25, 1972, Ser. No. 291,716
Int. Cl. B65h 39/02
U.S. Cl. 270—54 11 Claims



A method and apparatus for optimizing on-line production in a bindery by providing a signature gathering machine in which hopper pockets not being utilized in a production run may be made ready for the next production run without interrupting or interfering with the current production run. The individual hopper pockets may be removable and transportable to an off-line make-ready stand where make-ready adjustments may be made on each pocket individually or the pockets not currently in use may remain on-line but disconnected from the machine drive and, through automatic controls, the necessary make-ready adjustments are made at a single off-line pocket and transmitted simultaneously to all on-line pockets.

3,809,386

DEVICE FOR ASSOCIATING MOUNTS FOR SLIDE TRANSPARENCIES

Johannes Loersch, 4153 Huls, Krefelder Strasse 40, Germany

Filed Feb. 8, 1971, Ser. No. 113,384
Int. Cl. B65h 39/02
U.S. Cl. 270—58 6 Claims

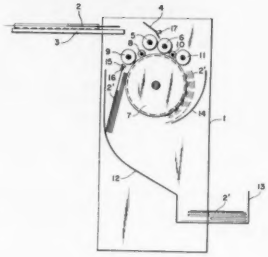
A device for mounting photographic slide transparencies in mounts, each mount comprising a pair of mount halves wherein one mount half is placed on top of the other and the transparency is positioned between them; the device having a horizontal conveyor system for conveying the lower half mounts under a spaced resilient horizontally disposed tongue with a free after end which supports the upper mount half and cooperates with a pivotable lever which it underlies to retain the upper mount half approximately parallel to it until the mount halves are pressed together by the pivotable lever. Both the upper and lower mount halves are moved by vertically extending catches and are so spaced on the conveyor that the pivotable lever presses the succeeding mount halves together in a downward movement due to gravity when the leading already joined mount is carried from under the after free end of the pivotable lever. A brake is provided at the side of the conveyor system to bias the mount halves snugly against the catches behind the free end of the tongue to insure their proper alignment.

3,809,387

APPARATUS FOR THE AUTOMATIC FOLDING AND CREASING OF SHEET MATERIAL

Hans Heist, Wiesbaden-Schierstein, and Dieter Silbereisen, Wiesbaden, both of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Apr. 20, 1972, Ser. No. 245,922
Claims priority, application Germany, Apr. 22, 1971, 2119372
Int. Cl. B65h 45/20
U.S. Cl. 270—79 10 Claims



This invention relates to an apparatus for folding and creasing a sheet of material, comprising rotatable drum means for receiving said sheet on its periphery,

a pair of drivable nip rollers on axes parallel to the drum axis, for feeding the sheet onto the drum while the latter is being rotated, said rollers being pivotal parallel to their axes to bring each, one at a time, into driving contact with the drum,

a scanning element for the leading edge of the material on the drum means,

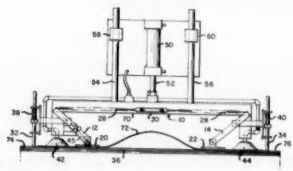
and control means, actuated by said scanning element, to stop the drum, so to pivot the feed rollers that one of them whose surface adjacent the drum has been rotating in the opposite direction to the drum now makes driving contact with the drum to drive it in the said opposite direction, whereby the material is folded and passes for creasing between the driving feed roller and the drum means, and then so to pivot the feed rollers that the other of them drives the drum in its original direction whereby the material is again folded and passes for further creasing between the now driving feed roller and the drum.

3,809,388

MACHINES FOR PICKING A SINGLE SHEET OF MATERIAL FROM A STACK

Thomas P. Downing, Maitland, Fla., assignor to Acme Conveyor Company, Inc., Sandford, Fla.

Filed Apr. 14, 1972, Ser. No. 244,144
Int. Cl. B65h 3/08, 3/54
U.S. Cl. 271—20 5 Claims



A machine for picking up one top sheet of material from a stack of sheets. The machine buckles the top sheet leaving a surface near the edges of a second sheet beneath the top sheet

exposed. A pair of feet urge against the exposed surface holding the second sheet against the stack while suction is applied to the top sheet to assist in lifting it from the stack.

3,809,389

SHEET FEEDING APPARATUS FOR PRINTING PRESSES

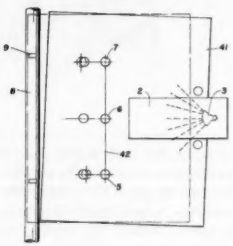
Arno Wirz, Bammental, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heildelberg, Germany

Filed Dec. 12, 1972, Ser. No. 314,338

Claims priority, application Germany, Dec. 18, 1971, 2163083

Int. Cl. B65h *9/14*

U.S. Cl. 271—91 **8 Claims**



Sheet feed apparatus for printing presses in which sheets are lifted from a stack and transported to a sheet feed device includes a carrier operable between a pick-up position and a feed position. The carrier includes a carrier bar having a central section and two outer sections rotatably mounted relative to the central section. Suction grippers are mounted on the two outer sections and also a suction gripper may be mounted on the central section. A slide bar means is provided for varying the travel pattern of the outer suction grippers such that the latter are operable to align a sheet as the sheet is transported from the stack towards the sheet feed device.

3,809,390

SHEET GRIPPER APPARATUS FOR A CUTTING AND CREASING PRESS

Franz N. Lenoir, Marcinelle, Belgium, assignor to Miller Printing Machinery Co., Pittsburgh, Pa.

Filed Jan. 12, 1972, Ser. No. 217,303

Int. Cl. B65h *29/04*

U.S. Cl. 271—204 **3 Claims**

A pair of endless chains are reeved about spaced pairs of sprockets and transverse gripper bars are connected to the endless chain in spaced relation to each other. The sprockets are driven to propel the chains with transverse gripper bars secured therethrough through the cutter and creaser section, stripping section and delivery section of the press unit. The gripper bars have a plurality of gripper members secured thereto and extending rearwardly therefrom. The gripper members include a rigid base or pad member extending rearwardly from the gripper bar and a resilient sheet engaging gripper finger positioned in overlying relation with the fixed rearwardly extending rigid pad member. The gripper finger actuator includes vertical pin members extending upwardly through vertical portions in the transverse gripper bar with the upper edge portions abutting the underside of the resilient gripper fingers. The lower edge portions of the pin members have rollers thereon arranged parallel to the longitudinal axis of the transverse gripper bars. An elongated plate is slidably secured to the underside of the transverse gripper bars and has portions abutting the respective rollers connected to the vertical pins. The plate members have an inclined portion adjacent to the respective rollers so that axial movement of the plate member relative to the gripper bar moves the roller members along the inclined portions of the plate to move the resilient gripper finger end portions away from the fixed pad of the gripper member. The plate unit includes cam followers connected at one end to the transverse gripper bar and at the other end to the slidable plate. The cam followers are arranged to move the slidable plate longitudinally relative to the gripper bar to open the gripper members at preselected locations along the press unit.

3,809,391

FLEXIBLE STRUCTURE FOR SKI TRACKS AND THE LIKE

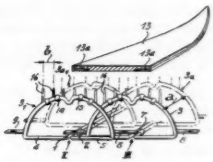
Jacques Leon Alexandre See, Paris, France, assignor to Royalty S.A., Luxemburg Grand Duchy, Luxembourg

Filed Apr. 17, 1973, Ser. No. 351,888

Claims priority, application France, Apr. 21, 1972, 72.14337

Int. Cl. A63b *69/18*; **A63c** *19/10*

U.S. Cl. 272—56.5 SS **15 Claims**



A flexible structure for ski tracks for simulating skiing on snow. The flexible structure comprises similar partially imbricated elements. Each element is made of a succession of upstanding parallel arcs. The tops of the arcs are provided with protuberances and vertically protruding flexible fingers. The base basis of the fingers are at a level lower than top of the protuberances.

3,809,392

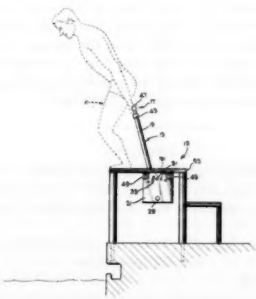
SWIM STARTING BLOCK WITH ADJUSTABLE HANDLE

Edward F. Kral, Jr., 217 Wehrli Rd., Naperville, Ill.

Filed Jan. 4, 1971, Ser. No. 103,468

Int. Cl. A63b *5/10*

U.S. Cl. 272—57 R **5 Claims**



A swim starting block has a handle attached thereto by means of a base in which the handle is pivotally mounted. The

attached handle has both a vertical and horizontal component of position adjustment with respect to the block to accommodate the stance of a swimmer and support the swimmer while assuming a starting position for a swim race. The handle and its attaching base may be a portable assembly attachable to the block.

3,809,393
SWIVEL CASTER SUPPORTED EXERCISING HANDLE APPARATUS

Bowan Jones, 831 N.E. 20th Ave., Fort Lauderdale, Fla.

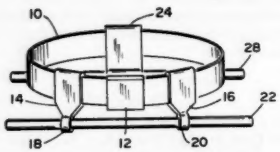
Filed Oct. 25, 1972, Ser. No. 300,795
Int. Cl. A63b *23/00*
U.S. Cl. 272—57 J **6 Claims**

An exercising device in the form of a handle supported by at least three swivel casters and adapted to be moved about a floor while supporting the upper body of a person in use. The handle defines a longitudinal axis around which the swivel casters are symmetrically and fixedly disposed. Additionally, the handle has a girth which enables circumferential gripping by an adult hand.

3,809,394
TWO BAR EXERCISER

Merwin Guy Hall, Rt. Box 268, Covington, La.

Filed Sept. 18, 1972, Ser. No. 289,964
Int. Cl. A63b *23/02*
U.S. Cl. 272—80 **3 Claims**



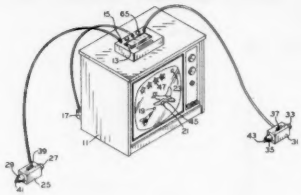
Two semi-rigid bars are suspended from an adjustable belt adapted to encircle the waist. One bar is positioned in front of the body near the top of the pelvis and the second bar is positioned at the rear of the body near the bottom of the pelvis. Means are provided for pulling the first bar toward the second bar so as to rotate the top of the pelvis toward the rear of the body while exercising various body muscles.

3,809,395
TELEVISION COMBAT GAME

Gordon H. Allison, Jr., and Clarence V. Greaf, both of Fort Wayne, Ind., assignors to The Magnavox Company, Fort Wayne, Ind.

Filed Sept. 28, 1972, Ser. No. 293,202
Int. Cl. A63f *9/00*
U.S. Cl. 273—1 E **6 Claims**

Apparatus for playing a combat type game on the screen of a television receiver is disclosed comprising circuitry for generating a target on the screen player movable in its horizontal and vertical positions, circuitry means for generating a projectile on the screen which is player controllable in its vertical position but which executes a trajectory having a preset horizontal component, and circuitry for extinguishing the target when the target and projectile are sufficiently close to indicate a "hit." The apparatus may include a circuitry for extinguishing both the target and the projectile and will, of course, employ player actuable circuitry for restoring the extinguished markers. An overlay which may be attached to

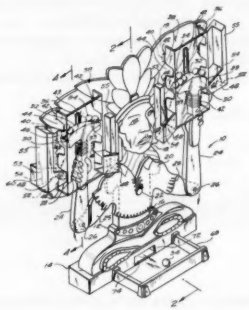


the screen of the receiver has indicia thereon defining permissible target locations thus restricting the positions to which one player may move the target. This overlay also has score keeping indicia which may be selectively illuminated by moving a score keeping marker behind the appropriate indicium reflecting the current game score, and the overlay may also include indicia indicating the projectile source and indicia near the permissible location indicia indicating the target if the permissible location indicia does not itself suggest a target.

3,809,396
BALANCE GAME

Charles Leicht, Merrick, and Tormod K. Reinertsen, East Northport, both of N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.

Filed Mar. 12, 1973, Ser. No. 340,429
Int. Cl. A63f *9/00*
U.S. Cl. 273—1 R **16 Claims**



The balance game includes a pivoted balance beam having marble support members pivotally connected thereto at its opposite end portions, with the support members being guided for vertical movement and adapted to support a plurality of objects, such as marbles or the like, in containers operatively associated with the balance beam. The containers have a plurality of apertures formed therein, in spaced positions with respect to each other, so that when an imbalance occurs in the balance beam, and the beam begins to pivot, the ends of the support members are moved to positions adjacent the apertures in the containers, thereby causing the marbles to fall from the containers.

3,809,397

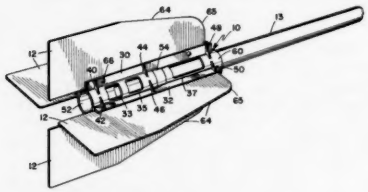
APPARATUS FOR DEVELOPING QUICKNESS IN SWINGING OF A BASEBALL BAT

Bryan J. Gruenewald, 3684 Strand Way, San Diego, Calif.

Continuation-in-part of Ser. No. 170,075, Aug. 8, 1971, abandoned. This application Apr. 3, 1972, Ser. No. 240,446

Int. Cl. A63b 69/40

U.S. Cl. 273—26 B 10 Claims



Exercise apparatus for use in conjunction with an ordinary baseball bat including a tubular tapered body that is inserted over the handle end of the bat and lodges near the hitting end of the bat. The tapered body mounts air resistance vanes, spaced around its circumference, and received in channels formed by lengthwise, parallel channel wall members attached to the tapered body. In use, the apparatus is installed over a bat, and the bat swung in the normal fashion. The user experiences the feel of substantially the normal swing augmented by greatly increased resistance. The resistance is at a maximum at the highest velocity. This produces maximum conditioning and developing effect on the wrists and those muscles involved in the follow through portion of the swing.

3,809,398

METHOD AND APPARATUS FOR AUTOMATIC BOWLING PIN SETTING

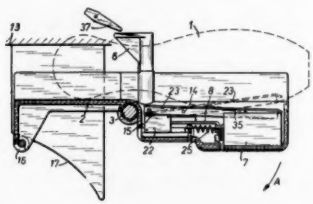
August Schmid, Schwerzenbach, Switzerland, and Georges Goens, Heverlee, Belgium, assignors to Serania AG Patentverwertungs-und Finanzierungsgesellschaft, Glarus, Switzerland

Filed Sept. 20, 1972, Ser. No. 290,514

Claims priority, application Switzerland, Sept. 22, 1971, 13870/71

Int. Cl. A63d 5/08

U.S. Cl. 273—43 A 10 Claims



To reset, automatically, all the bowling pins for one game of bowling, or only those which have not been knocked over by a bowled ball, a frame is provided which is supplied with tipping baskets, each one adapted to hold a bowling pin and having electromagnetically operated flaps engaging over the neck of the bowling pin. The frame, with the baskets upright and the flaps open can be lowered to pick up the pins which have been left standing, the frame raised, and empty baskets are, selectively, filled with pins; the frame is then again lowered, and the flaps opened to release all the pins which were in baskets.

3,809,399

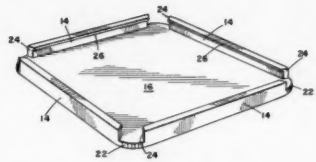
SNAP PLATE FOR FOOTBALL

Thomas Cuprak, 2038 Alta View Dr., San Diego, Calif.

Filed Apr. 28, 1972, Ser. No. 248,636

Int. Cl. A63b 67/00

U.S. Cl. 273—55 R 6 Claims



An item for use on a wet football field whereby the ball is supported on the line of scrimmage in reasonably dry condition since otherwise the ball, even though quickly wiped off, may be again made wet and slippery by recontammination with the wet and muddy turf when placed on the ground at the scrimmage line. This invention envisages a light weight water repellent plate which is easily carried manually and which has cleats on its underside to engage the turf and a replaceable absorptive pad or towel held in place on its upper surface by a peripheral wall on the plate.

3,809,400

BOWLING PIN SWEEPING AND CLEARING MECHANISM

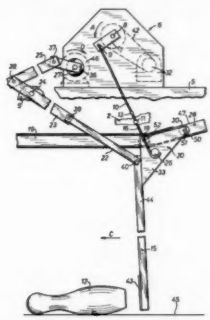
August Schmid, Schwerzenbach, Switzerland, and Georges Goens, Heverlee, Belgium, assignors to Patentverwertungs- und Finanzierungsgesellschaft Serania AG, Glarus, Switzerland

Filed Sept. 20, 1972, Ser. No. 290,533

Claims priority, application Switzerland, Sept. 22, 1971, 13871/71

Int. Cl. A63d 5/08

U.S. Cl. 273—54 A 12 Claims



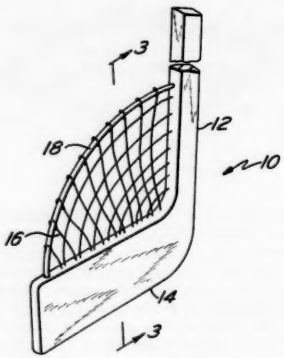
A sweeper arm, guided in guide rails is linearly reciprocable by a motor driven crank through a linkage consisting of levers and links, and additional drive means are provided to swing the sweeper arm about the horizontal axis, upwardly, so that the sweeper arm will be lifted away from the alley floor and clear the field of vision. The sweeper arm can reciprocate approximately horizontally along guide rails which, at an end position, are open upwardly so that when a motor-driven gripper lifts the sweeper arm, rollers engaged in the guide rails can be lifted out of the guide rails for upward swinging movement.

3,809,401

HOCKEY STICK

Allen R. Hankele, Somerdale, N.J., assignor to Hankele Sports Enterprises, Inc., Philadelphia, Pa.

Filed Mar. 12, 1973, Ser. No. 340,157
Int. Cl. A63b 59/12
U.S. Cl. 273—67 A 6 Claims



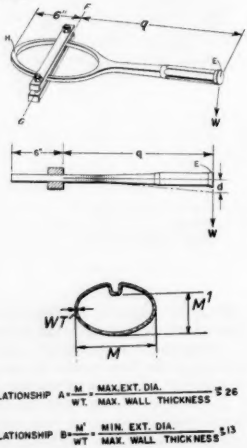
A hockey stick comprising a handle and a blade which is integral therewith. The blade projects at an obtuse angle from the handle, thereby forming an elbow between the handle and the blade. A flexible net is secured in the elbow between the handle and blade.

3,809,402

TENNIS RACKETS AND FRAMES THEREFOR

Robert C. Haines, Huddersfield; John E. Barrett, Kingston-on-Thames, and Eric H. Stevens, Monk Bretton, all of England, assignors to Dunlop Holdings, Limited, St. James, London, England

Continuation-in-part of Ser. No. 889,642, Dec. 31, 1969, abandoned. This application Sept. 5, 1972, Ser. No. 286,001
Claims priority, application Great Britain, Jan. 30, 1969, 367/69
Int. Cl. A63b 49/12
U.S. Cl. 273—73 C 12 Claims



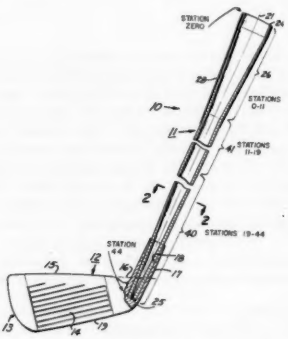
The invention concerns tennis rackets whose frames are formed from steel tube (so called "steel tennis rackets") of enhanced rigidity which gives them superior playing properties. This rigidity can be obtained by choosing steel tube whose dimensions are as follows: (A) the maximum external dimension of the tube cross-section divided by the maximum wall thickness of the tube at the cross-section is at least 26; and (B) the minimum external dimension of the tube cross-section divided by the maximum wall thickness of the tube at the cross-section is at least 13. If the tube is of oval cross-section, the maximum external dimension of the cross-section is preferably in a direction transverse to the plane containing the racket frame, of which the following is a specification.

3,809,403

SHAFT FOR CONVENTIONAL GOLF CLUB

Charles G. Hunter, P.O. Box 92, Yucca Vally, Calif.

Division of Ser. No. 790,602, Jan. 13, 1969, Pat. No. 3,614,101. This application Aug. 19, 1971, Ser. No. 173,114
Int. Cl. A63b 53/12
U.S. Cl. 273—80 B 5 Claims



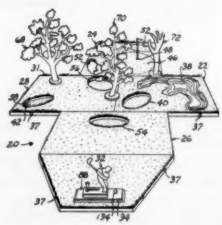
A golf club shaft having an axis, an inner wall and an outer wall, both axial, circular in cross-section, a major portion of it adjacent to the club head tapering so as to narrow toward the head end of the shaft, the wall thickness thereby increasing. The shaft has throughout its entire length a substantially constant cross-section area in planes normal to the longitudinal axis thereby providing uniform linear distribution of the shaft weight throughout its length. The shaft may be expanded beyond an extension of the taper to form a handle, to which a lightweight wrapping may be applied as a grip.

3,809,404

MINIATURE GOLF GAME AND GOLFER

Alfred E. Fikse, 5690 Park Crest Dr., San Jose, Calif.

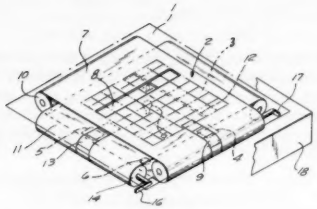
Filed Oct. 4, 1972, Ser. No. 295,039
Int. Cl. A63f 7/06
U.S. Cl. 273—87.4 5 Claims



A miniature golf course is formed by a selective arrangement of a plurality of panels, each having at least three equally

dimensioned marginal edges. A mechanical golfer, having articulated joints, is selectively positionable on the miniature golf course. The golfer advances a miniature golf ball from a tee area and putting positions toward a cup position in response to manual release of a triggering system controlling the golfer.

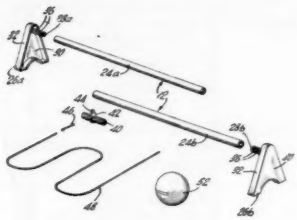
3,809,405
GAME APPARATUS FOR SIMULATING FOOTBALL, BASEBALL AND ANALOGOUS GAMES
Sol Friedman, 10 Ronald Dr., Monsey, N.Y.
Filed May 24, 1973, Ser. No. 363,712
Int. Cl. A63f 7/06
U.S. Cl. 273—88 **6 Claims**



A game board has an upper side and a lower side and is provided with a translucent field and with two viewing windows located adjacent to respective lateral sides of the field which extend at right angles to one another. A grid is provided at the lower side in registry with the field and has a plurality of grid squares each provided with a marking indicative of a play result. A first element is mounted beneath the grid for displacement by one player across the field in a first direction and has a first slot which is elongated over the entire dimension of the field in a second direction normal to the first direction. A second element is also mounted beneath the grid for similar displacement by another player across the field, but in a second direction; the second element has a second slot elongated over the entire dimension of the field in the first direction and crossing the first slot in space so as to define at the point of intersection of the slots therewith a square opening which shifts into registry with different ones of the grid squares in response to relative displacement of the elements. A first and a second series of indicia representative of respective offensive and defensive plays, respectively, are each provided on one of the elements and the indicia of each series are individually viewable in one of the windows in response to incremental displacement of the respective element. A light source is arranged to be energized when each player has displaced his element until a desired one of the indicia of the respective series becomes visible in his window, and when the light source is so energized the grid square with which the square opening is in registry becomes illuminated and the associated play result is viewable at the upper side of the game board.

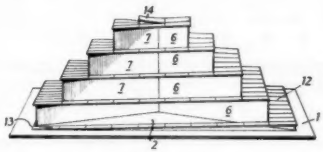
3,809,406
TETHER-BALL SUPPORT ASSEMBLY
Raymond J. Lohr, and Robert T. Auer, both of Erie, Pa., assignors to Louis Marx & Co., Inc., New York, N.Y.
Filed June 23, 1972, Ser. No. 265,845
Int. Cl. A63b 71/02
U.S. Cl. 273—95 A **9 Claims**

A tether-ball assembly where an elongated bar is supported at a given elevation above a supporting surface. An elongated flexible tether element is connected to the bar intermediate the ends thereof and has a ball attached thereto distant from the bar. Thus a player on one side of the bar can propel the ball to the other side thereof. The bar together with the structure for supporting it on the supporting surface and the component for attaching the tether to the bar are all capable of



being assembled and disassembled without the use of any tools and occupy a small space when disassembled, so that the structure is easy to set up for use and disassembled for storage.

3,809,407
BOARD FOR A BOARD GAME
Peter J. C. Quigley, 9 Milton Rd., Sussex, England
Filed Apr. 15, 1971, Ser. No. 134,305
Claims priority, application Great Britain, Apr. 16, 1970, 18334/70; Nov. 24, 1970, 18334/70
Int. Cl. A63f 3/00
U.S. Cl. 273—134 G **6 Claims**

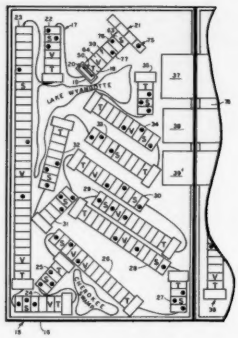


A board for a board game is incised so that it may be expanded from underneath to form a three-dimensional structure. In a preferred form, four hinged flaps are provided which are arranged so that, on lifting two of the flaps, all the flaps swing to expand and support the structure, the flaps being adapted to interengage to lock the structure in its expanded condition. To collapse the structure, the other two flaps are lifted to release the interengagement and allow the parts to return to two-dimensional form under gravity. In another form, the expanded board is supported on steps arranged at different levels on support members disposed in right-angular relationship and extending through slots in a base member.

3,809,408
BOARD GAME APPARATUS
William H. Sheward, Genoa Twsp., Delaware County, Ohio, assignor to Frank H. Foster, Columbus, Ohio
Filed Dec. 30, 1971, Ser. No. 214,012
Int. Cl. A63f 3/00
U.S. Cl. 273—134 B **7 Claims**

A board game apparatus including a playing board, bearing a plurality of separately delineated playing areas, each of said areas being formed with a plurality of laterally adjacent progress spaces, arranged in sequential array and terminating in a separately defined target space; and a target butt piece,

positionable adjacent said target space and adapted for displaying alternately selectable means for indicating the use of

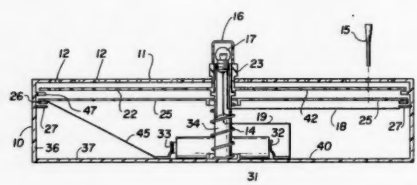


separately defined rules for regulating the progress of movement of playing pieces upon the playing board.

3,809,409
ROTATABLE DISC-PEG PROBE DEVICE HAVING AN ELECTRICAL CONDUCTING RIM SWITCH

Dan Haradyn, Hamilton, Ontario, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Feb. 13, 1973, Ser. No. 332,065
Int. Cl. A63f 9/00
U.S. Cl. 273—139 **1 Claim**



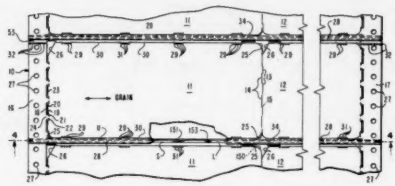
A device for the determination of random decisions, in which a peg is inserted into one of many holes in the top surface of the unit. An electric light bulb, or other signal device operated by an internal battery is also mounted on the face of the unit. Manual insertion of the peg through the selected hole may or may not be blocked by a perforated rotatable disc with through passage of the peg resulting in the contacting of a spring supported solid disc switch member which turns the light bulb or other electrical signal to the ON mode to signal a positive decision when an electrically conduction rim on the underside of the solid disc makes electrical contact with an electrically conducting rim supported by the unit.

3,809,410
CONTINUOUS CARD FORM

Oliver D. Johnson, E. Brunswick, and Kenneth B. Maynard, Belle Mead, both of N.J., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 16, 1971, Ser. No. 115,448
Int. Cl. B42d 19/00
U.S. Cl. 281—5 **10 Claims**

Improved folding during manufacture of continuous forms and refolding during runs through a high-speed printer are obtained by a fold score comprising a series of perforations extending across the detachable marginal strips and transversely aligned with, and preferably the same size as, the groups of perforations constituting the ties between the break-out cards and intervening medial strips. Especially in a two-card wide form, the structural strength of each medial strip adjacent a fold score line is suitably reduced, such as by a slot, to prevent toggle-like stiffening at the fold line, and consequent stacking

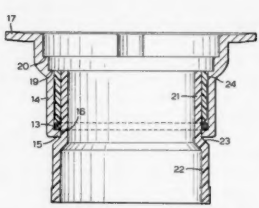


jams, such as can occur during refolding of the form upon sudden stops following a high-speed line skip in a printer. In grain long forms, the overlapping plies providing the medial strip are heat sealed only at selected areas rather than along the entire strip to reduce medial strip shrinkage and further improve ease of stacking.

3,809,411
DRAIN FITTING

John Ernest Emberson, 25 Dogwood Cres., Scarborough, Ontario, Canada

Filed Feb. 20, 1973, Ser. No. 334,113
Int. Cl. E04b 5/48
U.S. Cl. 285—42 **6 Claims**



A drain assembly for connecting plastic drain pipes to metal drain structural components comprises a metal body which is secured to a floor or roof structure, with relatively rigid plastic conduit parts attached thereto and making sealing contact therewith. The plastic parts of the assembly include a conduit extending through the metal body, a plastic collar fitting tightly between the metal body and the plastic conduit, and secured thereto e.g. by spot welding. A sealing ring is provided between a lower inward flange on the metal body, the plastic conduit and the lower edge of the plastic collar which bears down on and compresses the sealing ring to effect liquid seal between the metal and plastic parts.

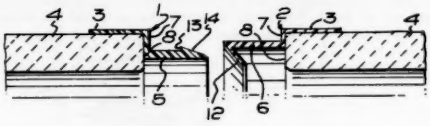
3,809,412
PIPE COUPLINGS

John Benjamin Glover, Stocksbridge, England, assignor to The Hepworth Iron Company Limited, Sheffield, England

Filed Jan. 17, 1972, Ser. No. 218,326
Claims priority, application Great Britain, Jan. 21, 1971, 2835/71
Int. Cl. F16l 17/00
U.S. Cl. 285—110 **7 Claims**

A pipe coupling for plain-end pipes, e.g., of fired clayware, comprises a pair of sleeves of resilient plastics material with cylindrical portions for securing on the pipe-ends and

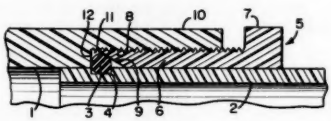
generally cylindrical joint forming portions adapted to extend beyond the pipe-ends, the joint forming portion of at least one of the sleeves, but preferably of each of the sleeves, being connected to its securing portion by an annular portion for abutting a pipe-end, and sealing means, such as mating tapers,



a sealing lip, or a sealing ring, being provided between the joint forming portions, whereby the securing portions can yield to the profiles and diameters of the respective pipe-ends to which they are applied, while the joint forming portions substantially retain their generally cylindrical shapes, so that little tolerance need be allowed for in the sealing means.

3,809,413
DEVICE FOR THE CONNECTION OF CYLINDRICAL MEMBERS

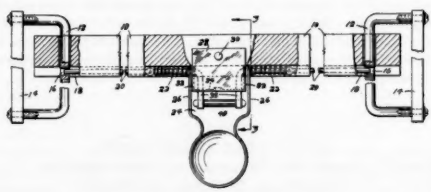
Raymond Boisserand, Le Placyre, 38 Voiron, France
Filed Mar. 16, 1972, Ser. No. 235,285
Claims priority, application France, Mar. 19, 1971, 71.09650
Int. Cl. F16l *17/00*
U.S. Cl. 285—348 **7 Claims**



The specification discloses a connecting device comprising an elastic deformable ring and a barrel nut adapted to connect a tubular cylindrical member to a second cylindrical member, the tightening of the barrel nut causing the compression of the ring mounted on a receiving throat of the second member and extending into a blind bore formed on the inner surface of the tubular member, the barrel nut being in free slidable and rotatable relationship with the second member.

3,809,414
TRIP LOCK

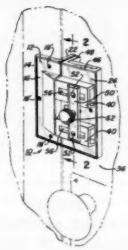
Herbert W. Neunherz, and Robert G. Bryant, both of Gardner, Mass., assignors to Gem Industries, Inc., Gardner, Mass.
Filed Dec. 27, 1971, Ser. No. 211,939
Int. Cl. E05c *9/04*
U.S. Cl. 292—4 **2 Claims**



A trip lock for the drop side of an infant's crib comprising a pair of movable lock rods having adjacent ends turned up and in engagement with a trip lever to operate the same, said trip lever bearing upon said ends and rotating the rods through a relatively small angle, said rod ends also being in engagement with a pair of opposed cam surfaces causing the rods to be moved relative to each other to unlock the drop side, wherein said trip lever is provided with a raised or struck-up bearing member for the rod ends to ride on.

3,809,415
LOCK BOLT

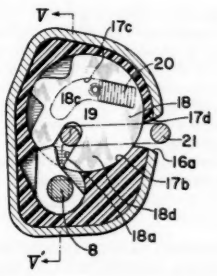
Kenneth C. Westcott, 3253 N. Clifton St., Chicago, Ill.
Filed Apr. 5, 1972, Ser. No. 241,233
Int. Cl. E05c *1/06;* **E05b** *9/00*
U.S. Cl. 292—33 **3 Claims**



A lock bolt is provided having an L-shaped strike plate and an L-shaped bolt housing. When the strike plate and bolt housing are connected to the respective door and door jamb, one arm of each of the L's will be facing and adjacent to the other. A sliding bolt is provided with knob means for enabling an operator to slide the bolt manually. The bolt housing has a locking recess cooperating with the knob means for retaining the knob means in a fixed, closed position when the bolt has been slid to its closed position.

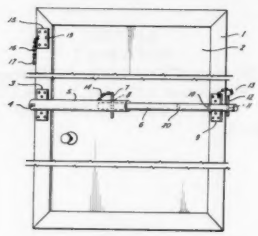
3,809,416
DOOR LOCK MECHANISM

Kenichi Kazoaka, Kariya, Japan, assignor to Aisin Seiki Company Limited, Kariya-shi, Japan
Division of Ser. No. 4,370, Jan. 20, 1970, abandoned. This application Jan. 17, 1972, Ser. No. 218,439
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **3 Claims**



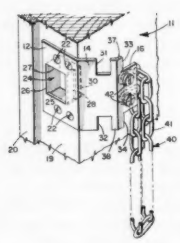
A door lock mechanism, characterized by that a rotatable disk latch having a plurality of recesses each adapted for engagement with a striker when a door fitted with the door lock mechanism less the striker is provided, and a rotatable pawl is provided in close proximity, said pawl being adapted for mechanical cooperation with said recesses or notches successively.

3,809,417
SECURITY DEVICE FOR DOORS
Robert T. Craig, 6506 Belfort, Houston, Tex.
Filed Sept. 5, 1972, Ser. No. 288,877
Int. Cl. E05c *1/04*
U.S. Cl. 292—259 1 Claim



A device for securing doors against intruders, having means for mounting to provide instant use and easy storage when out of use.

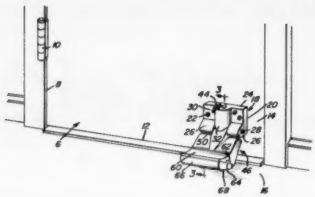
3,809,418
CHAIN-TYPE DOOR FASTENING DEVICE
Russell Canfield, Albuquerque, N. Mex., assignor to Tuflok, Inc., Albuquerque, N. Mex.
Filed Jan. 2, 1973, Ser. No. 320,606
Int. Cl. E05c *19/08*
U.S. Cl. 292—264 8 Claims



A chain-type door fastening device mounted on the door jamb and integrated into the strike plate assembly of the conventional door knob and latch. The chain-type door lock comprises a loop of chain that can be slipped over the door knob when the door is closed, allowing the door to be opened a few inches so the occupant can scrutinize a caller. However, there is also provided a chain locking means in the form of a pawl for engaging a link of the chain to shorten the loop of chain when the door is closed, thereby precluding the opening of the door even if the other latch is opened.

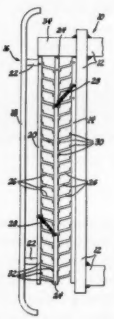
3,809,419
OCCUPANT SAFEGUARDING DOOR STOP
Jimmie A. Chezem, 4210 8th St. Ct. E., Bradenton, Fla.
Filed Aug. 28, 1972, Ser. No. 284,270
Int. Cl. E05c *3/12*
U.S. Cl. 292—338 4 Claims

Occupant safeguarding door stop means expressly designed and adapted for protective use on an interior surface near the lower edge and corner portion of a vertically hinged inwardly openable door. It comprises a mounting base or bracket screwed or otherwise fixed, and a complemental leg member hingedly mounted and depending and having a laterally directed contoured foot portion whose underneath side is equipped with a normally elevated anti-slipping floor engaging shoe. Spring means functions to yieldingly lift and release the



foot-equipped leg and permits the leg to be forced down to the desired door stop position. Releasable spring-loaded latching means functions to hold the door stop in its safety door retaining position.

3,809,420
ENERGY ABSORBING BUMPER ASSEMBLY
Peter A. Weller, Dover, N.H., assignor to McCord Corporation, Detroit, Mich.
Filed July 1, 1971, Ser. No. 158,918
Int. Cl. B60r *19/08*
U.S. Cl. 293—70 16 Claims

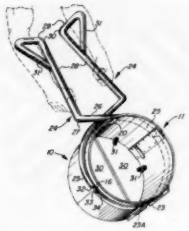


An energy absorbing bumper assembly including an inner member and outer member spaced from the inner member and an elongated central member disposed between the inner and outer members and generally parallel thereto. Energy absorbing means connect the length of the central member to the inner and outer members respectively for absorbing energy along the entire length of the central member while moving the central member longitudinally in response to a force applied to the outer means along only a portion of the predetermined length to move the outer member toward the inner member. The energy absorbing means includes elements extending from opposite sides of the central member at an acute angle relative thereto and generally in the same direction longitudinally of the central member. The assembly may include one or more central members as well as additional yieldable means for absorbing energy.

3,809,421
LEAF AND RUBBISH SHOVEL
Horace A. James, 6662 Blakemore St., Philadelphia, Pa.
Filed May 9, 1973, Ser. No. 358,527
Int. Cl. A01b *1/20*
U.S. Cl. 294—50.8 12 Claims

This specification discloses a leaf and rubbish shovel comprising two blades, each of which consists of upper and lower

sections that are connected for movement relative to each other by a flexible metallic strip with a leaf spring biasing the sections to a normal relation. The two upper sections are hingedly connected and a handle is anchored at one end to each of these upper sections. The handles are dimensioned to be grasped by the hands of a user with each handle having a laterally and outwardly extending arm that assumes a position under the forearm in the area of the elbow to enable the user to handle heavy masses of material gathered by the shovel.



The sections of each blade may be moved relative to each other by flexing the strip which connects them with stops being provided to limit the flexing movement in each direction.

The present invention relates to devices of the shovel type which are intended primarily for gathering and handling leaves and rubbish and is concerned primarily with certain improvements which facilitate handling of heavy masses gathered by the shovel and the dumping of such materials into a receptacle.

3,809,422

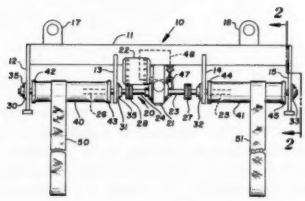
APPARATUS FOR TURNING HEAVY LOADS SUCH AS STONE

Thomas L. Schlough, St. Cloud, Minn., assignor to The Gran-A-Stone Co., Park Tool Company Division, St. Cloud, Minn.

Filed Apr. 28, 1972, Ser. No. 248,675

Int. Cl. B66c *1/18*

U.S. Cl. 294—74 **7 Claims**



Load turning sling means for handling heavy loads such as stone slabs and the like, and comprising a frame having brackets suspended therefrom for supporting a drive shaft in journaled relationship therewith. Drums are secured to opposite ends of the drive shaft, with the drums having an outer sling receiving drive surface thereon and a sling retaining head at each end of each drum. A pair of endless loop slings are arranged in captive relationship over the drums, and free to be positioned thereover, thus providing the load turning sling for handling loads suspended therefrom. The slings preferably have a high friction surface for frictionally engaging the sling receiving drive surface of the drum.

3,809,423

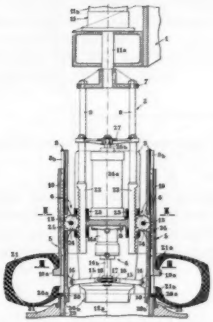
LOADER FOR TIRE CURING PRESS

Georges Gazuit, Chem Chauveau 03, Montlucon, France

Filed Apr. 16, 1973, Ser. No. 351,524

Int. Cl. B66c *1/22*

U.S. Cl. 294—88 **9 Claims**



This invention relates in general to loaders for tire curing presses, of the type comprising means for supplying the press mould with a crude tire to be vulcanized, and has specific reference to an improved loader of this character.

The loader comprises essentially a main frame structure **1**, an auxiliary frame **2** adapted to travel vertically in relation to said main frame, a plurality of segments **3** disposed on a circle and movable radially from an operative position to a release or clearing position, means **4** for moving said segments from their operative position to their release position, and vice versa, gripping means **5** movable vertically on each segment and other means **6** for driving said gripping means vertically along said segments.

3,809,424

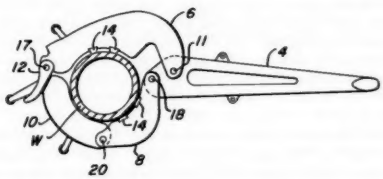
ADJUSTABLE TONGS

Charles D. Crickmer, P.O. Box 134E, Houston, Tex.

Continuation-in-part of Ser. No. 739,765, June 25, 1968, abandoned. This application Jan. 5, 1970, Ser. No. 740

Int. Cl. B66c *1/00*

U.S. Cl. 294—113 **8 Claims**



Tongs for oil well drilling and tubing operations wherein the tongs are adjustable to engage various sizes of cylindrically shaped members.

3,809,425

KITCHEN ACCESSORY FOR AUTOMOBILES

Anthony J. Blaschke, 1320 State Fair, Sedalia, Mo.

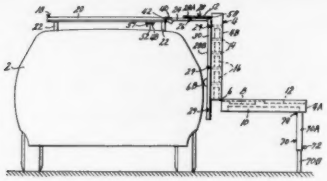
Filed Nov. 6, 1972, Ser. No. 304,088

Int. Cl. B60p *3/02*

U.S. Cl. 296—22 **4 Claims**

A kitchen accessory for automobiles consisting of a rectilinear case having two hingedly related halves, the case being adapted to be disposed above an automobile in the

manner of luggage in a luggage rack, but connected permanently to the automobile by a track device such that it may be moved to and supported in a position at one side of the automobile, and opened, whereby one half thereof is disposed



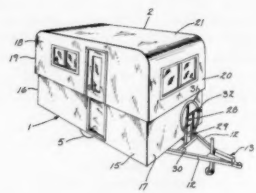
horizontally, opening upwardly and may carry a camp stove and fuel supply, and the other half is disposed vertically, rising from the inner edge of the stove half and opening outwardly, and may carry shelves for food supplies and the like.

3,809,426

MECHANISM FOR RAISING AND LOWERING TELESCOPIC TRAVEL TRAILER

Rudy J. Ratcliff, Marengo, Ill., assignor to Ratcliff Industries, Inc., Juneau, Wis.

Filed Aug. 28, 1972, Ser. No. 284,341
Int. Cl. B60p 3/34
U.S. Cl. 296—27 **7 Claims**



A mechanism for raising and lowering a telescopic travel trailer. The travel trailer includes a lower trailer section and an upper trailer section that telescopes vertically with respect to the lower section from a retracted position for transporting to a raised position for camping. The upper trailer section is raised and lowered by a hand wheel connected to a shaft that extends longitudinally of the lower section and the shaft is connected by cables to the upper trailer section. Rotation of the shaft in one direction through use of the hand wheel will cause the cables to wind on the shaft to raise the upper trailer section, while winding the shaft in the opposite direction will permit the upper trailer section to lower. To counterbalance the weight of the upper trailer section, a pair of springs are mounted on the frame of the lower trailer section and are connected by cables to the shaft in a manner such that when the upper trailer section is in the lower position the springs are extended, and as the upper trailer section is raised, the force of the springs acts to aid in raising the upper trailer section.

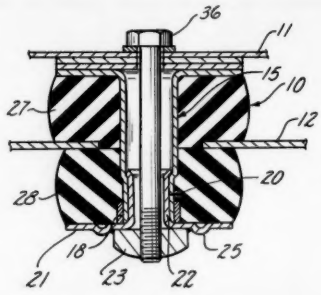
3,809,427

VEHICLE BODY MOUNT

John E. Bennett, Sterling Heights, Mich., assignor to Bennett Equipment Corporation, Detroit, Mich.

Filed Oct. 3, 1972, Ser. No. 294,538
Int. Cl. B62d 27/04
U.S. Cl. 296—35 R **10 Claims**

A body mount and a method of assembling the same comprising a first sheet metal part having a base and an integral tube extending from the base, a second sheet metal part having a base and an integral tube extending from said base, the tube of said first-mentioned part having a portion adjacent the free end thereof which is of reduced internal diameter thereby forming an intermediate connecting portion between the portion of greater diameter and the portion of lesser diameter which is positioned in spaced axial relationship to the free end of the tube of said first part. The second part has its tubular



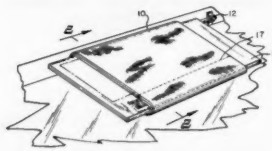
part telescopically received in the tube of said first part, the outer diameter of said tube of said second part being less than the inner diameter of the end portion of said first part. A pair of resilient blocks are provided through which the tubular parts extend. The free end of the tubular part of said second part is flared outwardly into engagement with the intermediate portion of said first part to hold said blocks of resilient material and a portion of the vehicle frame in locked position.

3,809,428

SUN VISOR ACCESSORY

Eli Cohen, 350 Continental Ave., Paramus, N.J.

Filed June 1, 1972, Ser. No. 258,853
Int. Cl. B60j 3/00
U.S. Cl. 296—97 C **2 Claims**



A stretchable, tubular sleeve-like member provided with means thereon for the reception of various often used articles or objects and which is adapted to be mounted on the sun visor of a motor vehicle to thereby render such articles or objects easily accessible to the driver or passenger of a motor vehicle.

3,809,429

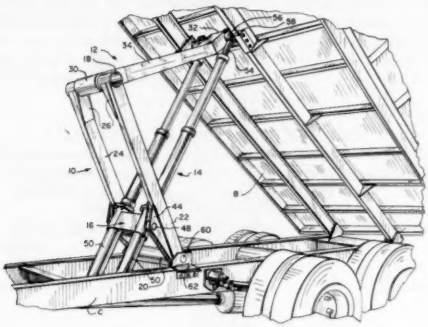
SCISSOR FRAME ASSEMBLY

Glen L. Channell, Loveland, Colo., assignor to Hydraulics Unlimited Manufacturing Co., Eaton, Colo.

Filed Feb. 12, 1973, Ser. No. 331,621
Int. Cl. B60p 1/20
U.S. Cl. 298—17 S **11 Claims**

A scissor frame assembly for use in dump vehicles especially designed to stabilize the dump bed when elevated in the face of laterally unbalanced loading of the bed. The main and tongue frame of the scissor frame assembly each employ a pair of elongate hollow cylindrical hinge tubes to establish the three pivot axes of the scissor frame assembly. The hinge tubes of

each of the tongue and main frames are interconnected to each other by rigid frame members of hollow tubular transverse cross-section which have high resistance to twisting or longitudinal torsional forces and also against lateral bending forces. Each of the tongue frame and the main frame is designed to be an independently rigid frame in and of itself with one hinge tube of the two frames being telescopically and rotatively received on a hinge tube of the other frame to pivotally interconnect the two frames into the scissor frame



assembly. The resulting construction has substantial rigidity against forces induced by unbalanced loading of the bed which tend to shift the hinge tube axes out of parallelism with each other or to shift the hinge tubes laterally relative to each other in a direction parallel to their axes. The frame assembly is designed to be employed either as a stabilizing frame in which raising and lowering of the bed is accomplished by an independently mounted hydraulic motor system or alternatively as a scissor hoist in which the hydraulic lift system is mounted upon and incorporated in the scissor frame.

3,809,430

SLOPE CAVE LEACHING OF EXPOSED OR NEAR-SURFACE MINERALIZED DEPOSITS

Stanley D. Michaelson, and Carl D. Broadbent, both of Salt Lake City, Utah, assignors to Kennecott Copper Corporation, New York, N.Y.

Filed May 18, 1972, Ser. No. 254,688

Int. Cl. E21c *41/14*

U.S. Cl. 299—5 **4 Claims**

Metal values are extracted by a combination of slope caving and leaching from mineralized deposits at or near the surface of the earth that are uneconomic to work in normal ways either because of excessively low grade or access difficulties, e.g., areas normally encountered at the fringes of open pit mining operations. Undercutting of a slope to induce caving results in effective mass fragmentation of the mineralized material and the formation of a substantially unstratified and highly porous body of fragmented material at the foot of the slope. Application of a leach solution to such body, either as is or leveled and provided with superficial basins for holding a supply of the leach solution, so such solution percolates downwardly through the fragmented and unstratified material, extracts values therefrom which are recovered by collection and processing of the pregnant leach liquor.

3,809,431

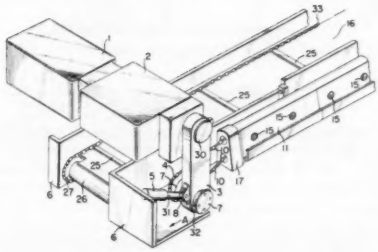
DRIVING DEVICE FOR RANGING-TYPE COAL PLANERS

Shigeo Nakajima, Kushiro, Japan, assignor to Taiheiyo Coal Mining Co., Ltd., Tokyo, Japan

Filed Feb. 12, 1973, Ser. No. 331,481

Int. Cl. E21c *29/16*

U.S. Cl. 299—34 **2 Claims**



This invention relates to a device for driving ranging-type coal planer as well as to an idler in the return device for said coal planer.

When a coal planer is used in a conveyor system on the coal face, advance and retreat of said coal planer cause the coal planer chain which interlocks with the driving wheel to slacken.

The invention also relates to a driving device for ranging-type coal planers wherein tension is applied to said driving wheel in a fixed direction to prevent the coal planer chain from slackening, and where, the wheel on the coal planer's return side supporting said coal planer chain is freely coupled onto the axis of the face conveyor wheel so as not to be affected by the rotation of said axis.

3,809,432

ROTARY TOOL HEAD FOR A CONTINUOUS BORING MACHINE

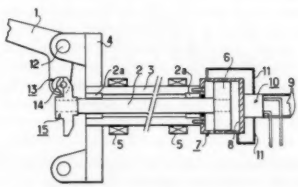
Marcel Montacie, Paris, France, assignor to Union Industrielle Blanzy-Ouest, Paris, France

Filed May 17, 1972, Ser. No. 254,123

Claims priority, application France, May 17, 1971, 71.17770

Int. Cl. E21c *37/26*

U.S. Cl. 299—85 **2 Claims**



Tool for a rotating head of a continuous drilling or cutting machine, mounted on a tool-carrier fixed on the said rotating head, driven in a rotating sweeping movement in a plane passing through the axis of rotation of the said rotating head, by the action of hydromechanical means driving a rotating rod coaxial with the said axis in a reciprocating movement; a

knuckle joint with an eccentric axis arranged between the rod and the tool-carrier ensures that the linear movement of said rod is converted into a rotating movement of said tool-bearer.

3,809,433

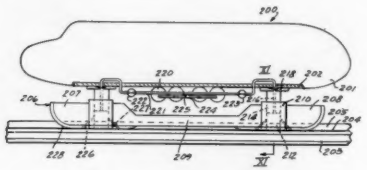
ANTI-FRICTION VEHICLE SUPPORT SYSTEM

Dzemal Mulasmajic, 338 Pleasant Hill Blvd., Palatine, Ill.

Continuation-in-part of Ser. Nos. 175,940, Aug. 30, 1971, Pat. No. 3,719,395, and Ser. No. 210,923, Dec. 22, 1971, Pat. No. 3,734,565. This application Nov. 20, 1972, Ser. No. 308,115

Int. Cl. B60v *3/04*

U.S. Cl. 301—1 **7 Claims**



A magnetic wheel for supporting a vehicle employs a permanent magnet or an electromagnet in the shape of a ring which is journalled for rotation about a shaft. The shaft is loosely coupled to the frame of the vehicle for vertical movement by means of a member which positions a permanent magnet or an electromagnet within the ring which is poled to repel the ring. The wheel is adapted for steering by providing that the loose coupling includes a pivotal coupling and by providing a lever arm for connection to a steering mechanism, such as a rack and pinion mechanism. Another embodiment utilizes a high pressure low leakage piston instead of the magnets within the ring, and a ski-like support utilizes a controlled high pressure air system to support a rail-type vehicle.

3,809,434

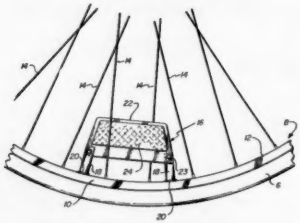
BICYCLE WHEEL WITH RIM AND HUB MOUNTED REFLECTOR

Henry J. Lindner, Wood Dale, Ill., assignor to Beatrice Foods Co., Chicago, Ill.

Filed May 19, 1972, Ser. No. 255,090

Int. Cl. B60b *7/00*

U.S. Cl. 301—37 R **2 Claims**



A bicycle having mounted on a circumferential wheel structure thereof a reflector element to provide side reflections when operating the bicycle. The circumferential wheel structure comprising the hub, or the rim, has a support bracket mounted thereto preferably by spot welds, and the reflector element is mounted to said support bracket either directly or indirectly where a backer plate is provided for the reflector element. A double reflector element may be provided for opposite side reflection, and the support bracket may be variously connected to the reflector alone, to the reflector and the backer plate, or to the backer plate alone.

3,809,435

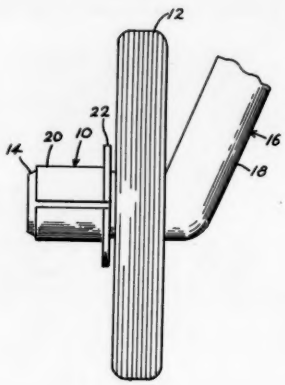
FRICTION KEEPERS FOR WHEELS AND STRUCTURES UTILIZING THEM

James C. Morris, 140 Lincoln, Ashland, Oreg.

Filed Mar. 23, 1973, Ser. No. 344,253

Int. Cl. B60b *37/10;* **F16c** *27/00*

U.S. Cl. 301—112 **8 Claims**



In toy structures such as model aircraft, for example, the problem of quickly, dependably and inexpensively securing and sustaining a wheel in place with freedom for rotation on a fixed bearing shaft in substantially a fixed radial plane of the shaft, is solved by the provision of an integral plate-and-sleeve device which is slit along a radial plane. The internal sleeve diameter is made small enough so that it requires enlarging deformation within its elastic limit in order to be fitted onto the shaft. The expanded sleeve portion firmly grips the shaft for retaining the wheel in place, while the plate portion guides the wheel, being effective, if necessary, to prevent or sharply limit wobbling of the wheel. Two of these devices, placed sleeve to sleeve, may combine not only to retain and guide a wheel, but also to serve jointly as a bearing for it.

3,809,436

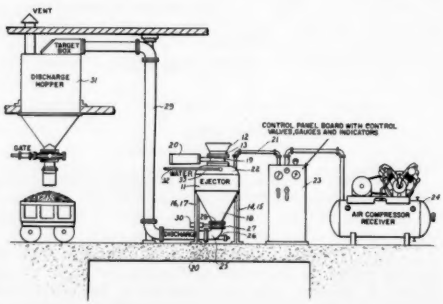
PROCESS FOR CONVEYANCE OF ASH

Charles P. Ciaffone, Sturbridge, Mass., assignor to CPC Engineering Corporation, Sturbridge, Morocco

Filed May 25, 1972, Ser. No. 257,012

Int. Cl. B65g *53/12*

U.S. Cl. 302—20 **1 Claim**



A process for conveying ash which comprises uniformly moistening said ash and thereafter subjecting said moistened

ash to pneumatic pressure so as to convey it through a connecting pipe to a receiving means, and an apparatus directed thereto which comprises means for introducing the ash; a pneumatic ejector situated beneath the introducing means, which is a generally cylindrical vessel terminating in a conical bottom section, having an inlet valve suitable for closing off the inlet to make the vessel airtight, an air inlet for admitting compressed air to the ejector, the air inlet being connected by a monitored pressure air line to a source of compressed air, a manifold situated in said ejector and containing a plurality of spray nozzles for introducing water into the ejector, the manifold being connected to a monitored external water source, and a discharge gate also suitable for making the vessel airtight; and a discharge pipe leading from the bottom of the ejector to a receiving means.

3,809,437

ANTI-SKID BRAKE CONTROL SYSTEM

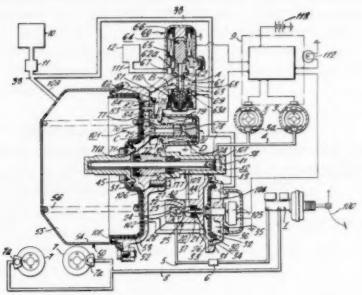
Masami Inada, Kariya, and Masamoto Ando, Toyohashi, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Sept. 25, 1972, Ser. No. 292,153

Claims priority, application Japan, Sept. 25, 1971, 46-74908

Int. Cl. B60t *8/06*

U.S. Cl. 303—21 F **12 Claims**



An improved anti-skid brake control system of the type comprising a cut-off valve and a hydraulic capacity controller disposed within a hydraulic braking circuit connecting a master cylinder with wheel brake cylinders, wherein in an anti-skid operation, the cut-off valve first blocks passage of pressurized fluid from the master cylinder to the wheel cylinders, and then the capacity controller is conditioned for its pressure decreasing operation for effecting the anti-skid operation. The system further comprises a skid sensor for generating first and second signals therefrom in response to wheel locking conditions, a first servomotor for pneumatically actuating the cut-off valve, a second servomotor for pneumatically actuating the capacity controller, a first pneumatic selector valve electrically operated by the first signal to operate the servomotors, a second pneumatic selector valve electrically operated by the second signal during the activation of the first selector valve to accelerate the operation of the servomotors, and a control valve to regulate the operation of the servomotors.

3,809,438

PNEUMATIC CONVEYING APPARATUS

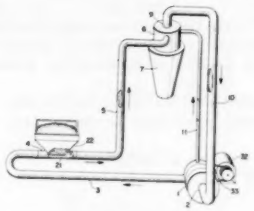
Elbert G. Hubbard, Hillside, Ill., assignor to Arbeck Industrial & Mining Equipment Co. Limited, Scarborough, Ontario, Canada

Filed Mar. 22, 1973, Ser. No. 343,861

Int. Cl. B65g *53/28, 53/40, 53/60*

U.S. Cl. 302—22 **6 Claims**

A pneumatic conveying apparatus for particulate materials uses a multi-stage centrifugal fan energizer wherein the first stage has stationary blades of lesser diameter than the impeller, and a vented shroud. The vent is returned to a cyclone separator which is downstream from a material inlet for the particulate materials. The energizer creates a lower pressure in the conduits between the material inlet and separator and between the separator and energizer than in the return con-



duit between the vented shroud of the energizer and the separator. Any very fine material particles or dust that reach the energizer rather than being separated in the cyclone separator are entrapped in the shroud and returned to the separator therefrom. No filters are required for dust collection. The apparatus may be closed loop or open loop; and if it is closed loop, the pneumatic gas may be other than air.

3,809,439

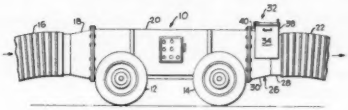
ATTACHMENT FOR DISTRIBUTING ROCK DUST

Albert L. Benedetti, R.D. No. 2, Rayland, Ohio

Filed June 14, 1972, Ser. No. 262,478

Int. Cl. B65g *53/38*

U.S. Cl. 302—53 **6 Claims**



A hopper having a pair of generally rectangular side walls and front and rear walls with an arcuate semi-circular edge portion is positioned in overlying relation with a generally conical exhaust duct portion of a blower. The front and rear wall lower edge portions have substantially the same configuration as the duct outer surface to thus form a substantially fluid tight connection therebetween. The side walls have lower inturned portions abutting the outer surface of the duct portion to thus form a receiver for rock dust positioned on the outer surface of the exhaust duct. A cover member is hingedly secured to the upper edge of the rear wall and is arranged to be locked in place to form a relatively fluid tight enclosure within the hopper. The exhaust duct has an upper air inlet opening with an air directing tube secured thereto through which air from the internal portion of the duct is arranged to flow into the hopper and fluidize the rock dust within the hopper and direct the rock dust toward the lower portions of the hopper. The exhaust duct has a pair of elongated air inlet openings adjacent the lower portions of the hopper. Air flow tubes extend through the inlet opening into the inner portion of the hopper and are arranged to introduce a portion of the air stream flowing through the exhaust duct into the lower portions of the hopper. Outlet openings are provided in the duct adjacent the pair of air inlet openings and guide tubes surround the outlet openings and extend into the duct. The air flow tubes terminate within the hopper adjacent the outlet openings in the duct. The air as it leaves the air flow tubes entrains rock dust in the air stream and the air entrained rock dust flows through the outlet openings into the stream of ex-

haust air flowing through the exhaust duct. Flow control members are secured to the walls of the duct and are arranged to be positioned in overlying relation with the outlet openings formed in the duct to thereby control the amount of rock dust discharged from the hopper through the outlet openings into the air stream flowing through the duct.

3,809,440

SHAFT FOR DEPOSITING FIBRE FLOCK

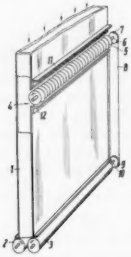
Hermann Trutzschler, Rheydt, Germany, assignor to Firma Trutzschler & Co., Rheydt-Odenkirchen, Duvenstr., Germany

Filed Oct. 25, 1972, Ser. No. 300,622

Claims priority, application Germany, Oct. 28, 1971, 2153665

Int. Cl. B65g *53/40*

U.S. Cl. 302—59 11 Claims



A shaft for depositing fibre flock in reptures for conveying flocks pneumatically to such shafts. The opening to enable the air conveying the flock into the shaft to pass out of the shaft consists of a horizontal opening extending over at least the greatest part of the width of a wall of said shaft. In this opening a roller is disposed which has a plurality of parallel annular surfaces lying in substantially vertical planes, the intervals between these surfaces being smaller than the size of the flock which is to be conveyed.

3,809,441

MODULATING APPLICATION VALVE

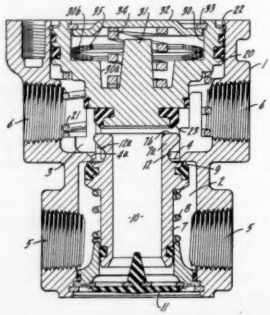
Boleslaw Klimek, Des Plaines, Ill., assignor to Berg Mfg. & Sales Co., Des Plaines, Ill.

Continuation of Ser. No. 4,550, Jan. 21, 1970, abandoned.

This application Oct. 12, 1971, Ser. No. 188,479

Int. Cl. B60t *15/06*

U.S. Cl. 303—52 3 Claims



A vehicle brake application valve, wherein a valve opening piston is moved through the mediacy of a first spring at a first force transmitting ratio and thereafter through the mediacy of a second spring at a second force transmitting ratio.

3,809,442

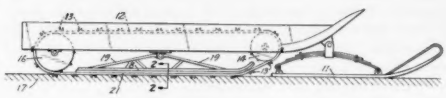
LOW-FRICTION SLIDE BEARINGS

Arthur H. Peterson, and Galen C. Britz, both of Maplewood, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 4, 1972, Ser. No. 312,190

Int. Cl. B62m *27/02*; B62d *55/24*

U.S. Cl. 305—14 14 Claims



A suspension and driving system for use on moving belts such as snowmobile tracks and conveyer belts comprises a flexible belt which is in sliding contact with support means and driving means to move the belt. The moving belt or its support means is equipped with a hard, low-friction bearing surface comprising isocyanurate resin and a lubricant. The isocyanurate-lubricant bearing surface rides on a metal or polymeric surface providing a replaceable low-friction slide bearing.

3,809,443

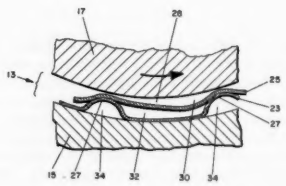
HYDRODYNAMIC FOIL BEARINGS

Justin Lawrence Cherubim, Flint, Mich., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Aug. 5, 1971, Ser. No. 169,372

Int. Cl. F16c *17/16*

U.S. Cl. 308—9 23 Claims



A resilient hydrodynamic bearing wherein a resilient bearing insert made up of two separate bearing element members arranged in laminate relationship and anchored together to allow a limited amount of relative movement therebetween is disposed within the spacing defined by the confronting surfaces of the opening in a supporting structure and a shaft or other movable member received within the opening and anchored to the supporting structure to allow for a limited amount of relative movement and operative under dynamic conditions to establish a hydrodynamic fluid film support for the movable member. One bearing element member is disposed adjacent the movable member and presents a surface area thereto and the other bearing element member includes a plurality of spaced-apart resilient surface elevations formed therein which under dynamic conditions are operative to frictionally contact and resiliently support the said one bearing element member and cause it to deflect between adjacent resilient surface elevations to create the load supporting hydrodynamic fluid film.

3,809,444

COMBINED RADIAL AXIAL BEARING

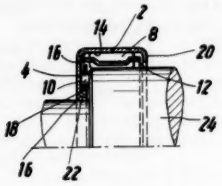
Hellmuth Eckhardt, Am Stasgen 6, 7512 Herzogenrath, and Reiner Sauerbier, Sebastianusstr. 11, 5102 Wuerselen, both of Germany

Filed Dec. 14, 1972, Ser. No. 314,931

Claims priority, application Germany, Dec. 24, 1971, 2164551

Int. Cl. F16c 19/04

U.S. Cl. 308—174 13 Claims



A combined radial axial roller or needle bearing with a drawn outer cup, in which the inner surface serves as a raceway for the roller bodies acting in radial direction and a part integrally formed with the cup and disposed generally normal of the cup serves as a support for the roller bodies acting in axial direction, said cup is formed pot-shaped, the inner surface of the bottom part serving as a support of the roller bodies acting in axial direction.

3,809,445

BEARING UNIT

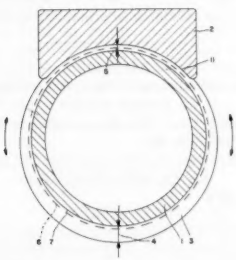
Stig Lennart Hallerback, Blodboksgatan, Sweden, assignor to SKF Industrial Trading and Development Company B.V., Overtoom, Amsterdam-W, Netherlands

Filed Oct. 30, 1972, Ser. No. 302,174

Claims priority, application Netherlands, Oct. 25, 1971, 7114660

Int. Cl. F16c 33/30, 27/00

U.S. Cl. 308—184 18 Claims



In the roller bearing having a outer race, one or more rings are provided on the outside surface of the outer race, perpendicular to the central axis of the bearing. The rings are made of an elastic material, such as rubber, and each run in the contact surface between the seat and the outer race in a groove or notch in the surface-seat. An open space is provided on both sides in the groove in axial direction, while, at least for part of the outside surface of the outer race, the distance in the contact surface between the part of the outside surface about which the elastic ring fits and the bottom of the groove is smaller than the radial thickness of a ring, such that the surface of an axial cross section through a ring is at most equal to the surface of the space defined by the sides of the groove and by the outer race.

3,809,446

THRUST ROLLING BEARING

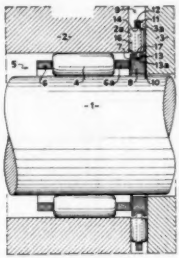
Alfred Pitner, Paris, France, assignor to Nadella, Rueil-Malmaison, France, a part interest

Filed July 7, 1972, Ser. No. 269,812

Claims priority, application France, July 7, 1971, 71.24800

Int. Cl. F16c 19/20, 19/00

U.S. Cl. 308—217 15 Claims



Thrust rolling bearing comprising a cage containing and guiding rolling elements. The cage is in two parts, namely a first part having bars defining apertures for the rolling elements and a second part in the form of a ring which has a plane sliding support face. The two parts are interconnected in such manner that they are relatively rotatable.

An assembly is disclosed in which the thrust rolling bearing is combined with a coaxial radial needle bearing and the needle ends, or the end of the cage for the needles, bears against the plane sliding support face.

3,809,447

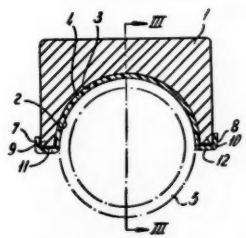
HOLDER FOR AN OUTER RACE OF A ROLLER BEARING

Fernlund Ingemar, Hindas, and Hallerback Stig, Frolunda, both of Sweden, assignors to SKF Industrial Trading & Development Co. BV, Jutphaas, Netherlands

Filed Nov. 10, 1972, Ser. No. 305,381

Int. Cl. F16c 33/30, 27/00

U.S. Cl. 308—236 5 Claims



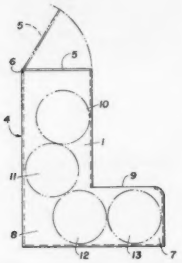
A bearing mount wherein there is provided one or more channels in the contact surface of the holder and/or outer race, with a longitudinal axis situated in a plane which is perpendicular to the bearing axis, while in the place of the channel a strip is fixed on the holder, the said strip being made of an elastic material, which may, for example, be rubber. The thickness of the strip in unstressed condition in a radial direction is larger than the total depth of the channel concerned, while so much space is left in the channel on either side of the strip in axial direction, that the axial cross-section of the strip is at most the same as the surface of an axial cross section of the channel in the particular spot.

3,809,448

TISSUE PAPER ROLL CONTAINER AND DISPENSER

Bertha R. Rakaska, Richmond Hill, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Nov. 13, 1972, Ser. No. 305,702
Int. Cl. B65h 19/00
U.S. Cl. 312—39 2 Claims



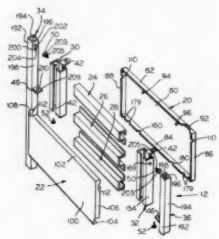
A container and dispenser for a plurality of rolls of tissue paper comprises a substantially L-shaped container having a substantially vertical part adapted to be mounted on a wall and having a substantially horizontal cover hingedly affixed to the top thereof. A substantially horizontal part extends at substantially right angles with the vertical part at the bottom thereof and has a common bottom with the vertical part. The horizontal part has an open top in a substantially horizontal plane whereby a plurality of rolls of tissue paper stored in the vertical part moves the lowermost roll into the horizontal part into accessibility at the open top thereof.

3,809,449

FOUNDATION FRAMEWORK FOR METAL OFFICE FURNITURE

Donald V. Beaver, Brookfield, Ill., assignor to All-Steel, Inc., Aurora, Ill.

Continuation of Ser. No. 80,835, Oct. 15, 1970, abandoned.
This application Sept. 21, 1972, Ser. No. 290,777
Int. Cl. A47b 96/20
U.S. Cl. 312—194 4 Claims



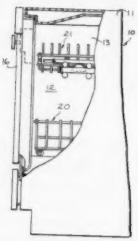
A foundation framework for office furniture desks, tables and the like comprising a torsionally rigid top structure, a pair of torsionally rigid panel leg structures supporting either end of the top structure and disposed in parallel spaced relation adjacent either end of the top structure and extending transversely thereof, a pair of spaced apart brackets on the upper edges of each panel leg structure that are secured by screws to the top structure, and a tie plate, such as a back panel, secured between the top structure and the panel leg structures and extending normally of same, at each end of the top structure to make the panel leg structure resistant to hinging action relative to the top structure. This basic foundation framework may be used as such to provide tables, or augmented by the application to same of standardized furniture forming components to provide desks of various types, bookcases, filing cabinets, and the like.

3,809,450

RACK LEVEL ADJUSTMENT SYSTEM IN A DISHWASHER

Lauren W. Guth, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 27, 1971, Ser. No. 212,301
Int. Cl. A47b 88/00, 95/00
U.S. Cl. 312—351 4 Claims



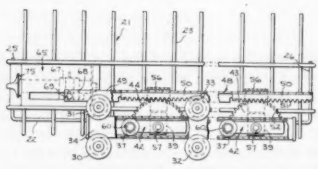
A dish supporting rack is mounted within the wash chamber of a dishwashing machine by connecting means permitting selective manual adjustment of the vertical level of the rack side. The connecting means includes a pair of spaced apart pivotal sectors, preferably formed from a durable plastic, linked to a manual control means at the front corner of the rack such that manipulation of the control means is translated to the sectors whereby the sectors pivot to vary the level of the rack side. Linkage between the control means and the sectors includes an elongated rod that may be formed as a toothed rack wherein plastic tooth sections are retained in a metal channel body portion. The manual control means has visual indicating means in combination therewith whereby the machine operator can ascertain the disposition of the rack side relative to the normal or intermediate level of adjustment.

3,809,451

RACK LEVEL ADJUSTMENT SYSTEM IN A DISHWASHER

Martin H. Pitstick, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 27, 1971, Ser. No. 212,302
Int. Cl. A47b 88/00, 95/00
U.S. Cl. 312—351 7 Claims



A dish supporting rack is mounted within the wash chamber of a dishwashing machine by connecting means permitting selective manual adjustment of the vertical level of the rack side. The connecting means includes a pair of spaced apart pivotal sectors, preferably formed from a durable plastic, linked to a manual control means at the front corner of the

rack such that manipulation of the control means is translated to the sectors whereby the sectors pivot to vary the level of the rack side. Linkage between the control means and the sectors includes an elongated rod that may be formed as a toothed rack wherein plastic tooth sections are retained in a metal channel body portion. The manual control means has visual indicating means in combination therewith whereby the machine operator can ascertain the disposition of the rack side relative to the normal or intermediate level of adjustment.

3,809,452

SYSTEM FOR CONTROLLING NUMBER OF REVOLUTIONS OF THE TAPE DRIVE IN A TAPE RECORDING AND REPLAYING APPARATUS

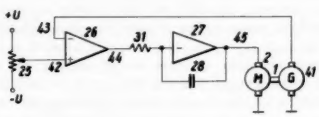
Richard Heinz, Niedergasse 10, 6102 Pfungstadt, Germany

Filed May 18, 1972, Ser. No. 254,400

Claims priority, application Germany, May 19, 1971, 2124921; May 21, 1971, 2125166

Int. Cl. H02p *1/04, 5/16*

U.S. Cl. 318—271 **1 Claim**



A tape recording and replaying apparatus having therein a system for controlling the speed of the tape drive, including a capstan motor, a tachometer for generating a voltage signal proportional to the number of the revolutions of the capstan motor, an integrating type operational amplifier receiving the voltage signal of the tachometer being coupled to the input of the operational amplifier; a circuit including a potentiometer for setting the speed of the capstan motor at a selectively variable predetermined value, a circuit coupled to the speed setting devices and generating a control voltage representative of the set speed and connecting it through the integrator to the energizing circuit of the capstan motor, whereby at sudden changes of the speed setting device the rate of change of the energizing current for the capstan motor remains substantially constant. The invention also discloses as a further aspect the limiting of the above control signal if the tape widing motors are overdriven at excess speeds.

3,809,453

REDUCED POSITIONAL SENSITIVITY FOR HOLOGRAMS OF ELECTRICAL SIGNALS

Hartwig Ruell, Otterfing, and Eckhard Storck, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

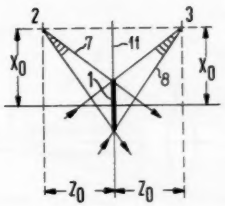
Filed May 16, 1973, Ser. No. 360,900

Claims priority, application Germany, May 18, 1972, 2224386

Int. Cl. G02b *27/00*

U.S. Cl. 350—3.5 **7 Claims**

A method directed to the holographic recording of information in the form of electrical signals on a light sensitive tape or storage medium moving in a feed direction and to the retrieval of information therefrom which method enables a high storage density on the storage medium and is less sensitive to translation of the storage medium during recording and retrieval in a direction transverse to the feed direction. The method accomplishes these features either by converging the object wave to a point while diverging the reference wave from a point or by diverging the object wave from a point while converging the reference wave to the point and by locating the two points on opposite sides of the storage medium in mirror symmetry and offset from an axis passing through the hologram center. In one embodiment of the invention, the points are located with respect to the center of the hologram so that an angle formed by a line extending from one of the points to the center of the



hologram and the hologram normal has a tangent which is equal to $\sqrt{2}$. In another embodiment of the present invention, the recording is accomplished with quasi-axially arranged waves utilizing a first wavelength and the reconstruction or retrieval occurs non-axially using a second wavelength which is shorter than the wavelength of the light utilized for recording. In a third embodiment, astigmatic reference and object waves are utilized.

3,809,454

MICROSURGICAL OPERATING UNIT

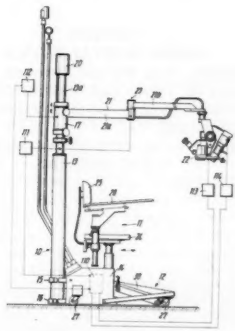
Dieter Ferdinand Brambring, Koblenz, Germany, assignor to Firma J. D. Moller, Optische Werke GmbH, Hamburg, Wedel, Germany

Filed Sept. 6, 1972, Ser. No. 286,812

Claims priority, application Germany, Nov. 16, 1971, 7143195

Int. Cl. G02b *23/16*

U.S. Cl. 350—84 **10 Claims**



A microsurgical operating unit comprises a mobile chair for the surgeon, a stand fixed to the chair for movement therewith and having a laterally swingable swivel arm adjustable in height thereon for supporting the microscope. A foot control switch means is fixed to the chair in the area of the surgeon's feet to carry out the swivel movements and drive movements of the microscope-bearing swivel arm. By means of this operating unit, the surgeon is enabled to carry out the control of the individual devices and of the microscope with the aid of his feet, and thus to concentrate completely on the operation area.

3,809,455
COUPLING DEVICE FOR OPTICAL WAVE GUIDES

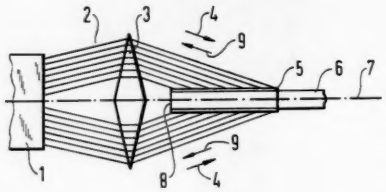
Dietlind Pekau, Krailling, and Horst Kiemle, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Sept. 22, 1972, Ser. No. 291,271

Claims priority, application Germany, Sept. 24, 1971, 2147841

Int. Cl. G02b 5/14

U.S. Cl. 350—96 WG **12 Claims**



A device for optically coupling a dielectric optical wave guide to another optical device such as a detector, a laser or light amplifier characterized by a coupling element having either a refraction index or surface relief structure which is arranged as a layer extending circumferentially around the surface of the wave guide adjacent one end, and an optical component, such as an axicon, kinoform, a phase hologram or a volume hologram, having an axis of rotational symmetry which is arranged coaxially with the axis of the wave guide between the end and the optical device. To produce the device, the layer is applied on the wave guide and treated by exposing with an amplitude modulated light beam or an intensity modulated electron beam. After completing the treating by developing and fixing the exposed layer, an optical component is arranged on the desired position between the end of the wave guide and the optical device.

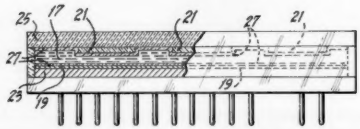
3,809,456
LIQUID CRYSTAL DEVICE

Joel E. Goldmacher, West Windsor Township, Mercer County, and Miguelita G. Tayag, East Windsor Township, Mercer County, both of N.J., assignors to Optel Corporation, South Brunswick Township, N.J.

Filed Apr. 10, 1972, Ser. No. 242,467

Int. Cl. G02f 1/16

U.S. Cl. 350—160 LC **6 Claims**



A liquid crystal display device comprises a liquid crystal composition sandwiched between electrodes, at least one electrode being transparent. The liquid crystal device includes an aligning agent to improve the contrast ratio of the display and doping agents to adjust the conductivity of the liquid crystal composition.

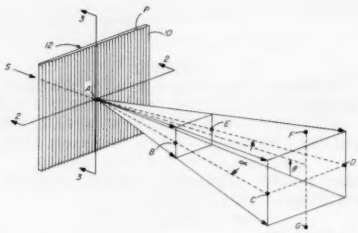
3,809,457
RADIATION-REDISTRIBUTIVE DEVICES

Clark Nelson Kurtz, and James John De Palma, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 13, 1972, Ser. No. 297,556

Int. Cl. G03b 21/60

U.S. Cl. 350—128 **34 Claims**



Radiation-redistributive devices, such as front and rear projection screens, including an optical layer wherein the optical path length, measured in at least one plane normal to the surface of such layer, randomly varies in such a manner that radiation normally incident on all small areas of the layer which intersect such plane is redirected by each point on such area which intersects such plane at an angle which is predictable only to the extent that the total redirected radiation from such points of each of such areas produces a common predesired redistribution profile, preferably rectangular in shape, as measured in said plane along a line substantially parallel to the surface of the optical layer. A method and apparatus for fabricating such a device is also disclosed.

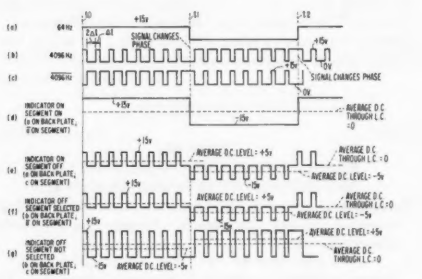
3,809,458
LIQUID CRYSTAL DISPLAY

Robert Charles Heuner, Bound Brook, and Stanley Joseph Niemiec, Somerville, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed May 25, 1972, Ser. No. 256,717

Int. Cl. G02f 3/16

U.S. Cl. 350—160 LC **17 Claims**



Multiplexed operation of a plurality of liquid crystal indicators is achieved with alternating, unipolarity, symmetrical exciting voltages and alternating, unipolarity, asymmetrical erase voltages. The average direct voltage level across any liquid crystal element in the erased condition is zero and the direct voltage level across that element during each half period of the exciting voltage is never greater than a fraction less than one-half of the unipolarity exciting or erase voltage amplitude.

3,809,459

ANTIREFLECTION COATING FOR AN INNER SURFACE OF CEMENTED LENSES

Shunichiro Wakamiya, Tokyo, and Kiyoshi Itoh, Fukuoka-machi, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 13, 1972, Ser. No. 297,356
Int. Cl. G02b 1/10
U.S. Cl. 350—164 4 Claims

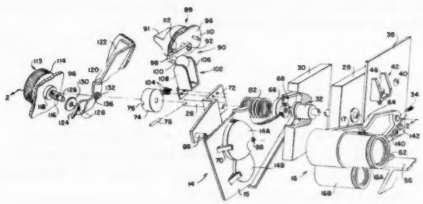
An improved arrangement for minimizing reflection of light from the interface between a lens and the adjoining cement has two reflection preventing layers between the lens and the cement. This is of particular value where the difference in index of refraction of the lens and cementing material is greater than about 0.2. The product of the indices of refraction of the two coating layers equals the product of the indices of refraction of the adjacent lens and the cementing material.

3,809,460

OPTICAL CONTROL MECHANISM

Richard H. Lettan, Pittsford, and Robert J. McGuire, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 22, 1972, Ser. No. 308,918
Int. Cl. G02b 7/02
U.S. Cl. 350—254 3 Claims



There is disclosed an optical control mechanism for use in a projection device such as a microfilm reader. The optical control mechanism effects selective positioning of one of two lens assemblies on the optical axis of the projection apparatus and locks the selected lens assembly in position. A pair of projection lenses of different magnification are mounted on a bracket which is keyed to a rotatably mounted shaft. The shaft is rotatable about an axis substantially parallel to a portion of the optical axis of the projection apparatus so that one of the projection lenses may be selectively aligned with the optical axis of the projection apparatus by rotation of the shaft. An optical control mechanism includes a control member such as a knob which is mounted for rotation between a first control position and a second control position. The control member is operatively coupled to the shaft by means of a bell-crank connected to the control member, a spherical member secured to the free end of the bell crank and a U-shaped spring member operatively connected to the shaft and projecting radially therefrom. The spherical member is located between the upstanding arms of the U-shaped member and is in substantial operative engagement therewith.

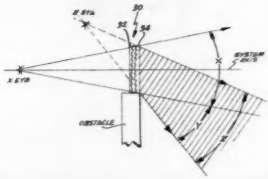
3,809,461

VIEW EXPANDING AND DIRECTING OPTICAL SYSTEM

John D. Baumgardner, and Dorothy J. Ebeling, both of Holland, Mich., assignors to Donnelly Mirrors, Inc., Holland, Mich.

Filed May 12, 1972, Ser. No. 252,611
Int. Cl. G02b 5/08
U.S. Cl. 350—302 9 Claims

A view expanding and directing optical system for use in viewing around obstacles and the like comprising in combination a negative Fresnel lens and a Fresnel prism disposed in separate planes immediately adjacent one another. In the preferred embodiment, the system is mounted on a vehicle, at the rear thereof, whereby the system provides an expanded and demagnified viewing area to the rear of and below the level of the rear window and/or laterally of the vehicle. In other embodiments, the system may be coupled to means for extending or retracting it at desired times, and may be used in conjunction with vision aiding elements, such as a rearview periscope, for providing an expanded and demagnified viewing area laterally and to the rear of the vehicle.

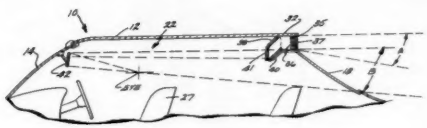


3,809,462

VIEW EXPANDING AND DIRECTING OPTICAL SYSTEM

John D. Baumgardner, and Dorothy J. Ebeling, both of Holland, Mich., assignors to Donnelly Mirrors Incorporated, Holland, Mich.

Continuation-in-part of Ser. No. 252,611, May 12, 1972. This application July 25, 1972, Ser. No. 274,968
Int. Cl. G02b 5/08
U.S. Cl. 350—302 15 Claims



An optical system for vehicles providing expanded and demagnified fields of view for overcoming blind spots normally encountered with presently known vision systems. The several forms of the invention utilize previously optically nonfunctional areas of the vehicle such as roof areas above the rear window and side areas in the rear roof support posts to provide expanded vision areas laterally and to the rear of the vehicle. The optical systems variously includes negative Fresnel lenses alone or in combination with regular prisms or Fresnel prisms, all of which are viewed via conventionally mounted rear view mirrors adjacent the vehicle driver either alone or in periscopic systems including additional second and third mirrors.

3,809,463

ANIMATION CELLS AND TECHNIQUE

Paul Winchell, 20438 Moberly Pl., Canoga Park, Calif.

Filed June 28, 1972, Ser. No. 267,025
Int. Cl. G03b 19/18, 21/32
U.S. Cl. 352—51 16 Claims

An animation process, and a cell for employment in said process wherein live actors and real, or substitute props used as "space savers," may be used to provide salient features and

points of reference in an animation cell, so as directly to provide information to be displayed in the completed cell, or to

provide dark lines for a painter who applies opacities thereto, and to a director who aligns overlays or underlays relative thereto.

3,809,464

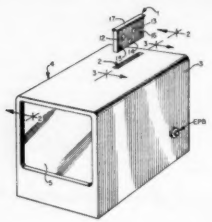
EMERGENCY EJECTION SYSTEM FOR AUTOMATIC TRANSPARENCY PROCESSING AND PROJECTION APPARATUS

Stewart Bennett, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 261,152, June 9, 1972. This application Mar. 21, 1973, Ser. No. 343,368

Int. Cl. G03b *23/02*

U.S. Cl. 352—74 **16 Claims**



An emergency ejection system for automatic photographic transparency processing and projection apparatus adapted to receive cassettes of film, each containing a film processor. The apparatus manipulates the film in the cassette to process it, unless it has already been processed, and projects processed film. A cassette is normally latched into the apparatus until the film has been projected and rewound. The system comprises an emergency eject control for causing the apparatus to eject the cassette at any point in the operating cycle, so that a malfunction within a cassette will not render the processing and projection apparatus inoperative.

3,809,465

MOTION PICTURE SYSTEM

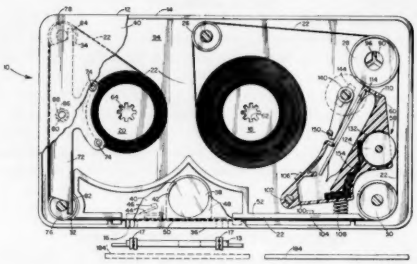
Paul B. Mason, Magnolia, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 17, 1972, Ser. No. 227,151

Int. Cl. G03b *17/52*

U.S. Cl. 352—78 R **31 Claims**

A multipurpose film handling cassette mountable in a viewer to perform alternate operational programs on the film strip, one such program involving the application of a processing fluid to the film. The cassette includes an applicator system having a coating roller, a rupturable pod of processing fluid, a reservoir chamber and a wick connecting the reservoir chamber to the coating roller. This applicator system is mounted for displacement between a first position wherein the coating roller is spaced from the film strip and a second position wherein it engages the film strip. A lever arm extends from a pin having a slotted recess accessible to a sensor-actuator pin of the viewer so that it may be rotated thereby



to selectively displace the applicator system into its second position and rupture the fluid pod. The coating roller is adapted to be reverse driven by a film guide roller of the cassette. When the applicator system is returned to its first position, the aforementioned slotted recess assumes an orientation different from its initial orientation.

3,809,466

MOTION PICTURE CAMERA WITH ELECTRONIC CIRCUITRY FOR SINGLE-FRAME PHOTOGRAPHY

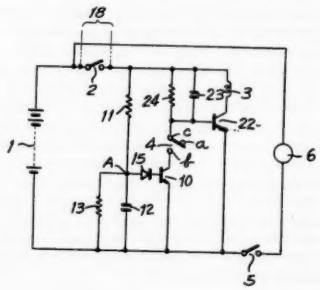
Katsumi Kobayashi, Tokyo, Japan, assignor to Kabushiki Kaisha Yashica, Tokyo-to, Japan

Filed Apr. 9, 1973, Ser. No. 349,277

Claims priority, application Japan, Apr. 20, 1972, 47-46155

Int. Cl. G03b *21/38*

U.S. Cl. 352—169 **6 Claims**



A motion picture camera which has a driving motor capable of being turned on and off through a control switch. The latter is in turn regulated by an electromagnet. A selecting switch is provided for selecting single-frame operation, and when the latter operation is selected by the selecting switch the electromagnet is connected to a timing circuit which is automatically regulated after a given timing interval by the timing circuit so as to bring about opening of the control switch and stopping of the motor when a single frame has been exposed.

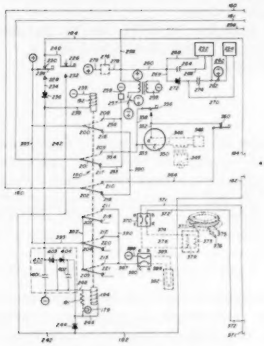
ERRATUM

For Class 353—15 see:
Patent No. 3,809,364

3,809,467
AUDIO-VISUAL PRESENTATION SYSTEM

Leland W. Sprinkle, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Continuation of Ser. No. 30,396, April 21, 1970, abandoned. This application June 14, 1972, Ser. No. 262,803
Int. Cl. G03b *31/06*
U.S. Cl. 353—15 **5 Claims**



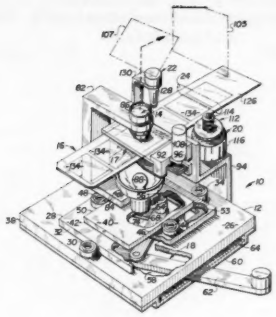
Synchronized and coordinated operation of a slide projector and tape playback mechanism for a programmed performance is effectuated by a directing arrangement which operatively responds to control signals derived from the tape and a signal generator made effective in response to a predetermined slide projector operation. A photo-cell and thyristor component of the arrangement, functioning as a switch in response to tape signals, acts through preset contacts of a latching relay to complete a circuit wherein a slide changer of the projector is activated. The signal generator provides a signal which conditions a further switching component of the arrangement to complete a circuit for repositioning latching relay contacts whereby a program terminating operation of the tape playback and projector ensues in response to an extended control signal from the tape and continues until the tape and slide projector are again conditioned for a program start.

3,809,468
FILM STRIP READER

Jules G. Moritz, Los Altos Hills, Calif., assignor to Microform Data Systems, Inc., Menlo Park, Calif.

Filed Dec. 24, 1970, Ser. No. 101,219
Int. Cl. G03b *23/08, 23/12*
U.S. Cl. 353—26 **5 Claims**

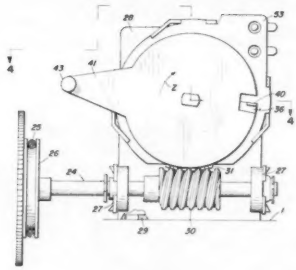
Apparatus for reading recorded informaton on a film strip of the type having a number of end-to-end segments with each segment having a plurality of information-containing image frames. The apparatus operates to move a particular segment of the film strip automatically into a fixed location near an optical system, the latter being movable relative to the fixed location by a pantograph assembly so that the optical path of the optical system can be aligned with any one of the image frames of the film strip segment at the fixed location. The optical system has a lens assembly movable over an optically flat surface of a window at the fixed location and the film strip is releasably clamped to the opposite, optically flat surface of the window to thereby provide for automatic focusing.



3,809,469
SLIDE CARRIER CYCLING MECHANISM FOR OPTICAL PROJECTORS AND THE LIKE

Englebert Denis, Dilbeek, and Leon De Bondt, Hingene-Wintam, both of Belgium, assignors to GAF Corporation, New York, N.Y.

Filed Oct. 27, 1971, Ser. No. 192,880
Claims priority, application Belgium, Oct. 28, 1970, 95683
Int. Cl. G03b *23/02, 23/04*
U.S. Cl. 353—106 **16 Claims**



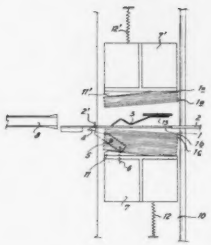
A cycling mechanism including a solenoid actuated clutch for periodically linking a continuously operating drive motor and a reciprocable slide changer is provided. The cycling mechanism comprises a rotatable clutch disk adapted to be continuously driven by a motor, an electromagnetic solenoid fixedly disposed about the hub of the clutch disk, a drive crank having a drive pin adapted to engage a corresponding cam on the slide changer to cyclically reciprocate the same disposed in an axial spaced apart relationship with respect to the clutch disk and mounted for both rotational and axial movement. Upon energization of the solenoid the drive crank is attracted thereto and moved axially into engagement with the clutch disk for rotation therewith, to drive the slide changer. Means are also provided to automatically return the drive crank to a neutral non-rotating position at the end of each revolution of the crank, corresponding to a complete slide changing cycle.

3,809,470

PROJECTOR

Serge Besancenot, 5 rue E. Sylvestre, Sevran, France

Filed June 4, 1971, Ser. No. 150,120
Claims priority, application France, June 5, 1970, 7020813
Int. Cl. G03b 23/02
U.S. Cl. 353—113 6 Claims



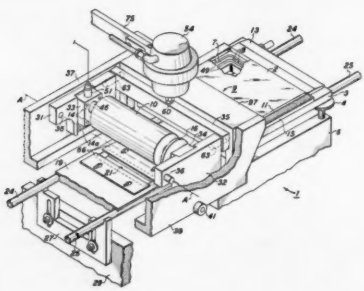
A slide projector in which a magazine for photographic slides is located in a tunnel arranged parallel to the projection axis and a pusher member is transversely movable to displace a slide at the projection station from the magazine to a projection position on the projection axis and vice versa. An elastically deformable leaf spring is positioned in the tunnel such that the stack of slides to be projected is initially therebehind, and the leaf spring shifts the slides one at a time after they have been projected to a position in front of the leaf spring.

3,809,471

PHOTOELECTROPHORETIC IMAGING APPARATUS WITH CORRECTION FOR PARALLAX

Charles Nesta, Rochester; Earl V. Jackson, Penfield; David D. Hoesly; Wayne F. Schoppe, both of Webster; Gino F. Squassoni, Pittsford, and Peter J. Warter, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed June 25, 1973, Ser. No. 373,559
Int. Cl. G03g 15/00, 15/04
U.S. Cl. 355—3 P 11 Claims



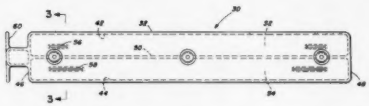
Apparatus for producing images using a transparent electrode, typically a flat plate, over which, a carriage which carries at least one roller, typically a roller electrode, into contact with the transparent electrode. In some embodiments, two or more rollers may be used, one of which may be an image transfer roller. Imaging suspension applied between a roller electrode and the transparent electrode is exposed to electromagnetic radiation under the influence of an electric field to form an image. The roller is rotatably mounted to the carriage by a detachable yoke mounting assembly which enables the ends of the roller to tilt in a vertical plane. The detachable yoke mounting assembly and thus the roller also pivots about an axis parallel to the transparent electrode and perpendicular to the direction of advancement of the carriage and roller. A force is applied to the yoke mounting assembly to maintain a constant force between the roller and the transparent electrode irrespective of any irregularities in contact between the roller and the transparent electrode. Machine drive mechanism is used for propelling the carriage which carries at least one roller over the transparent electrode and also to propel at least one slit aperture plate under the transparent electrode. The carriage and roller are propelled at a greater rate of velocity than the velocity of the slit aperture plate to correct for parallax.

3,809,472

PRE-DEVELOPMENT EXPOSURE ASSEMBLY

Karl E. Liechty, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 30, 1971, Ser. No. 214,244
Int. Cl. G03b 15/00
U.S. Cl. 355—3 R 5 Claims



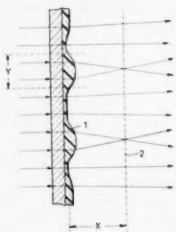
A pre-development exposure assembly is provided within an electrostatic reproduction machine transverse to the photoconductive surface thereof to selectively expose side portions of the photoconductive surface in response to a signal generated by a switch associated with the paper supply assembly responsive to paper size therein.

3,809,473

METHOD OF REPRODUCING A RELIEF IMAGE

Roland Moraw, Naurod, and Gunther Schadlich, Wiesbaden, both of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Dec. 21, 1972, Ser. No. 317,194
Claims priority, application Germany, Dec. 24, 1971, 2164622
Int. Cl. G11b 3/00
U.S. Cl. 355—9 8 Claims

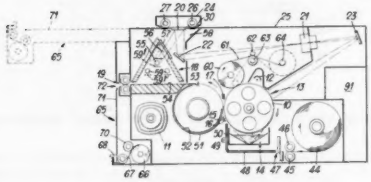


This invention relates to a method of producing a copy image of a transparent relief image on at least one thermoplastic layer which comprises passing light from a substantially point source through a layer containing the relief image, and obtaining the copy image in a plane located at a distance other than zero behind the relief image.

3,809,474
ELECTROSTATOGRAPHIC COPYING APPARATUS

Nandor Mihalik, Geranium, Molesey Rd., Walton-on-Thames, England

Filed Mar. 31, 1971, Ser. No. 129,668
Claims priority, application Great Britain, Apr. 1, 1970, 15349/70
Int. Cl. G03g 15/22
U.S. Cl. 355—11 16 Claims

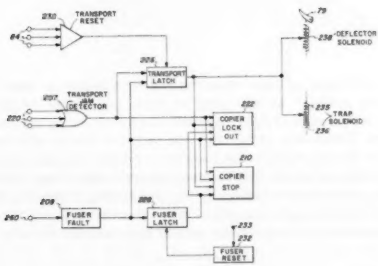


An electrostatographic copying apparatus comprising a combined illumination and fixing unit, a novel original feed employing a flexible transparent transport sheet, a perforated suction drum preferably having a sponge material surface to strip copy sheets from the imaging drum, a developer material applicator comprising a chamber having movable walls to bring the developer into contact with the drum, and a drum cleaner comprising a web in contact with the drum.

3,809,475
COPIER FUSER PROTECTOR

Donald S. Post, Fairport, and Edward G. Reehil, Henrietta, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 6, 1972, Ser. No. 312,556
Int. Cl. G03g 15/22
U.S. Cl. 355—3 R 2 Claims

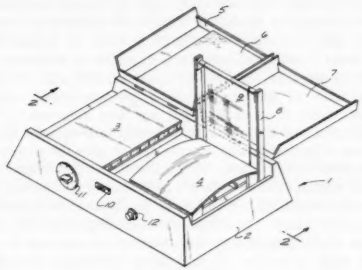


A copying system incorporating means to stop the system in the event of a malfunction, such as excessive temperature in the processor fuser. For this purpose, suitable detection means are provided for monitoring the system fuser and also the system paper transports. These detection means respond to a fault in the associated component to shut down the copying system. At the same time, latching devices are set which prevent restarting of the copying system until the fault has been corrected. A malfunction in the system fuser sets both the fuser latch and the paper transport latch so that, in this circumstance, both fuser and paper transports must be cleared before restarting of the copying system can be effected.

3,809,476
TWO-STAGE COPIER

Seymour Fader, Paramus, N.J., assignor to Robin International, Inc., New York, N.Y.

Filed Aug. 22, 1972, Ser. No. 282,837
Int. Cl. G03b 27/04
U.S. Cl. 355—113 8 Claims

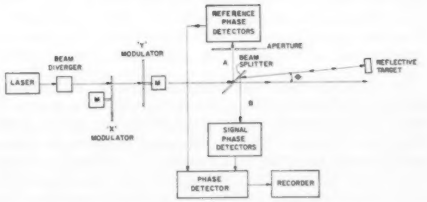


A two-stage copier has a housing in which there are located side-by-side exposure station and a heating station. The exposure station has a light source and a flat light-transmissive panel over the light source, with a cover member being hinged on the housing so that it can be pivoted onto the exposure station. The heating station has a heating member an upper surface of which is convex from the rear towards the front of the housing, and a frame element which is hinged in the region of the rear of the housing and which can be pushed down towards the convex surface. A relatively stiff web of synthetic plastic mesh is mounted on the frame element.

3,809,477
MEASURING APPARATUS FOR SPATIALLY MODULATED REFLECTED BEAMS

James T. Russell, Richland, Wash., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Nov. 1, 1972, Ser. No. 302,960
Int. Cl. G01b 11/26
U.S. Cl. 356—5 10 Claims



A modulated displacement indicator and its method of use that utilizes unfocused electromagnetic waves, like laser waves, which are spatially modulated. Either an angular direction or linear displacement can be obtained depending on whether the beam is divergent or parallel. In any case, the beam is modulated two dimensionally and then transmitted to a reference phase detector. This may be accomplished by a semitransparent mirror which functions as a beam splitter. One of the segments from the splitter is fed directly into the aperture of the reference detector to determine the phase at the center of the spatially modulated transmitted wave. Another of the beam segments can be transmitted through the beam splitter to a remote reflective target aperture. Part of the reflected beam is detected by a signal detector. The outputs

from the reference and signal detectors then have their phase relationships compared electronically. If the transmitted beam is of a known parallel width, the phase difference may be used to obtain the distance from the center of the beam to the target aperture. Should the beam be divergent, the phase difference can lead to a determination of the angle formed by the beam center line defined by the reference detector as one of its legs and the straight line to the target as the other leg.

In one practical embodiment of my invention several spaced reflective targets are randomly fixed to the surface of a rigid structure, like the interior walls of a mine. A transmitted parallel laser beam modulated and detected as indicated, is sequentially directed by a motor operated deflector to impinge on each of the targets in a predetermined order. Reflected beams from each target are then detected by the signal detector and the phase relationship between the transmitted and reflected beams ascertained to give the distances from the laser beam center line to the target. By comparing reference readings for each target individually and as a group to subsequent readings, variations in the distance between the targets can be noted. The constant monitoring of such minute variations of the targets tells the observer of variations in the attached rigid structure. Should these variations exceed a predetermined safety level, like excess deformation of a inner mine wall, a signal or other indicating device can be triggered.

3,809,478

ANALYSIS AND REPRESENTATION OF THE SIZE, SHAPE AND ORIENTATION CHARACTERISTICS OF THE COMPONENTS OF A SYSTEM

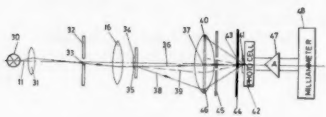
John Henry Talbot, 35 Balvicar Rd., Blairgowrie, Johannesburg, Transvaal, South Africa

Filed May 27, 1971, Ser. No. 147,436

Claims priority, application South Africa, May 29, 1970, 70/3652; Nov. 23, 1970, 70/7901

Int. Cl. G06k *9/08*

U.S. Cl. 356—71 **24 Claims**



The invention relates to a diffractometer for analysing the geometrical characteristics of the components of a system. In such a diffractometer the received diffraction pattern is filtered in accordance with a mathematical equation to yield a spatial period spectrum or a moment, excluding the zeroth moment, of that spectrum. The filtering may be effected by means of suitable optical filters for viewing on a screen or for electronic detection, or electronically in the detector circuits.

3,809,479

SPUTTERING METHOD AND APPARATUS FOR QUANTITATIVE AND QUALITATIVE ANALYSIS OF MATERIALS

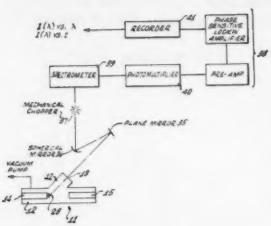
James M. Whelan, 1229-1/2 Flanders Rd., La Canada, Calif., and Joseph E. Greene, 4 Patricia Ct., Champaign, Ill.

Filed Nov. 26, 1971, Ser. No. 202,587

Int. Cl. G01j *3/30*

U.S. Cl. 356—85 **12 Claims**

Method and apparatus for trace analysis and concentration profiling of thin film semiconductor sample layers. The samples are DC sputtered at a constant rate in argon and the cathode glow region of the glow discharge monitored for the maximum electroluminescence of the desired sample constituent.



3,809,480

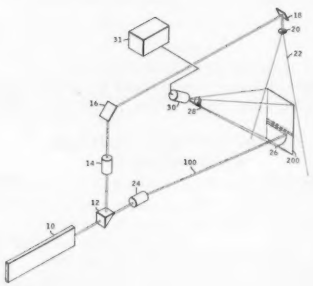
METHOD AND APPARATUS FOR SURVEYING THE VELOCITIES OF A FLOW FIELD

Alvis J. Somerville, and Edwin K. Yager, both of San Diego, Calif., assignors to General Dynamics Corporation, San Diego, Calif.

Filed July 24, 1972, Ser. No. 274,143

Int. Cl. G01n *21/00;* **G01b** *9/02;* **G01p** *3/36*

U.S. Cl. 356—103 **8 Claims**



A technique of flow visualization employing a laser to generate a sheet of light and at least one beam of light, wherein the beam of light is caused to scan or sweep the sheet of light. Receiving optics and one or more photo detectors monitor the interaction and provide as output as a function of the velocity of particulate matter present in the area of intersection of the light beams, thereby generating a velocity picture of the scanned area which may be processed and stored or presented on a cathode ray tube or other display device.

3,809,481

SINGLE REFLECTOR INTERFERENCE SPECTROMETER AND DRIVE SYSTEM THEREFOR

Rudolf A. Schindler, Sierra Madre, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

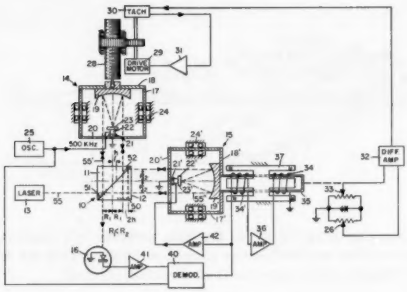
Filed Dec. 1, 1972, Ser. No. 311,234

Int. Cl. G01b *9/02*

U.S. Cl. 356—106 S **13 Claims**

In a Fourier interference spectrometer of the double-pass retroreflector type, a single mirror is employed in the path of both split beams of an incoming ray to cause them to double back through separate retroreflectors. Changes in optical path length are achieved by linear displacement of both retroreflec-

tors using a motor driven lead screw on one for large, low-frequency changes, a moving-coil actuator on the other for



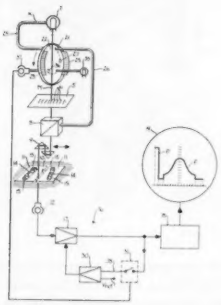
smaller, mid-frequency changes and a piezoelectric actuator on one of these two for small, high-frequency changes.

3,809,482

SIGNAL-COMPENSATING SYSTEM FOR MEASURING MACHINES, IN WHICH PHOTOGRAPHIC PLATES ARE EXAMINED BY A PHOTO-ELECTRIC METHOD

Nils Robert Dahr Aslund, Johanneshov; Sven-Olof Pettersson, and Sten Borje Angelstrand, both of Jonkoping, all of Sweden, assignors to Saab-Scania Aktiebolag, Linkoping, Sweden

Filed Apr. 3, 1973, Ser. No. 347,417
Claims priority, application Sweden, Apr. 5, 1972, 4335/72
Int. Cl. G01n *21/06, 21/22*
U.S. Cl. 356—205 **5 Claims**



An image beam from a constant intensity light source is passed through a small area of an image on a photographic plate, thence through a variable width scanning slot and onto a photoelectric detector. Relative scanning motion between beam and slot is effected in directions transverse to slot length. A second beam from the same source is directed around the plate, through the slot and onto the detector. The beams fall on the detector alternately, in synchronism with scanning, so that the second beam produces calibration pulses. Detector output is so amplified as to maintain amplified calibration pulses at constant magnitude.

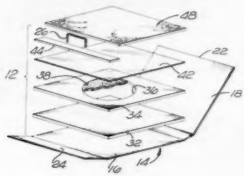
3,809,483

POLISHING KIT

Jesse R. Young, 5302 W. 138th St., Hawthorne, Calif.

Filed Nov. 17, 1972, Ser. No. 307,679
Int. Cl. A46b *11/00*; B08b *1/00*
U.S. Cl. 401—123 **1 Claim**

A polishing kit formed of a folder having a plurality of layers superimposed thereon. A base layer forms a support upon which a receptacle layer having a recess therein is positioned. Polishing material is placed in the receptacle layer recess and the receptacle layer is then covered with a protective layer of



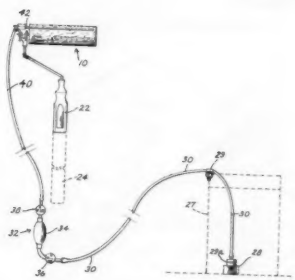
material such as transparent pressure-sensitive plastic material. A felt applicator may be placed on the top surface of the pressure-sensitive material and the superimposed layers mounted in a match-book type folder.

3,809,484

PAINT SUPPLYING APPARATUS FOR PAINT ROLLERS

Jennings H. Bradshaw, 5721 Bryant, Klamath Falls, Oreg.

Filed Jan. 8, 1973, Ser. No. 321,992
Int. Cl. B44d *3/00, 3/28*
U.S. Cl. 401—185 **3 Claims**



A convenient and efficient supply device is provided for delivering paint from a conventional container through a line which includes a first flexible hose, a manual pump, a second flexible hose, and a manifold, to the exterior of a conventional paint roller. The manifold can be used in either of two operating positions at opposite sides of the plane defined by the roller handle and the roller axis, and it can be instantly shifted at will from either one of these positions to the other. The line includes two interchangeable hoses of radically different lengths running, respectively, from source to pump and from pump to manifold. One arrangement disposes the pump for hand operation, the other for foot operation. A faucet attaching fitting at the introductory end of the line enables the line to be quickly and cleanly flushed out under pressure. Adaptation to rollers of different lengths is brought about by selection for use of a manifold corresponding in length to the length of the roller.

3,809,485

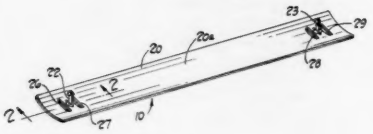
LOOSE-LEAF BINDER CONSTRUCTION

Lewis R. Beyer, 1255 W. River Rd., Valley City, Ohio

Filed Oct. 20, 1972, Ser. No. 299,302
Int. Cl. B42f *3/04*
U.S. Cl. 402—31 **23 Claims**

A plastic, i.e., synthetic resin, backbone or spine for a loose-leaf binder with integral studs for securing a ring member and separate abutments for inhibiting movement of the ring

member along the backbone. In one embodiment the backbone is insertable as a separate member between plies of a binder cover. In another embodiment it forms an integral portion of a unitary plastic loose-leaf binder cover. The studs



are headed, with a slot to allow deformation and insertion into apertures of a ring member. Upon localized heating of the heads, plastic flows into the slots to prevent removal of the ring member.

3,809,486

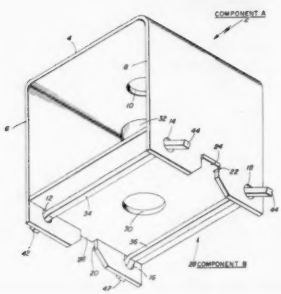
MECHANICAL COUPLING ARRANGEMENT

Richard A. Foerstner, Iowa City, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa

Division of Ser. No. 131,618, April 6, 1971, abandoned. This application Aug. 17, 1972, Ser. No. 281,574

Int. Cl. F16b *1/00*

U.S. Cl. 403—374 **2 Claims**



A mechanical arrangement is disclosed for interconnecting structures by exerting equidistant upward forces to one component and an intermediate downward force to the adjacent component. A twisting motion of rotatably disposed locking members actuates the coupling. In an illustrative embodiment a magnetron energy generator and magnetic field producing means, such as an electromagnet, are coupled together by support and housing structures actuated by rigid elongated metallic bars which provide a positive locking force.

3,809,487

RESILIENT RETAINER SYSTEM FOR PAVEMENT MARKER ASSEMBLY

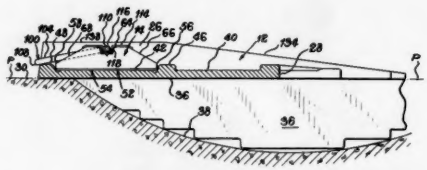
Robert M. Flanagan, Summit, N.J., assignor to Amerace Esna Corporation, New York, N.Y.

Filed Oct. 4, 1972, Ser. No. 294,809

Int. Cl. E01f *11/00*

U.S. Cl. 404—15 **22 Claims**

In a pavement marker assembly in which a signal device is affixed to a base member, a retainer system capable of withstanding the rigors of roadway surface use but easily released for removal of the signal device. The retainer of the system includes elements of U-shaped configuration in which one of the arms of each U-shaped element is resiliently deflected relative to the other and is secured to the base member while the other of the arms of each U-shaped element



secures the signal device to the base member. An improved base member accommodates snowplow blades which are angled laterally with respect to their direction of travel.

3,809,488

SUPERVISORY EQUIPMENT FOR MACHINE TOOLS

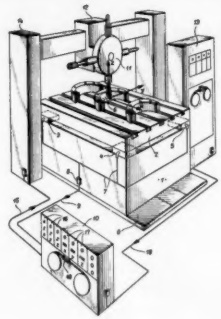
Hans C. Sonderegger, 8413 Neftenbach, Switzerland, assignor to Kistler Instrumente AG, Winterthur, Switzerland

Filed Aug. 8, 1969, Ser. No. 848,416

Claims priority, application Switzerland, Aug. 8, 1968, 12109/68

Int. Cl. B23b *39/00*

U.S. Cl. 408—6 **5 Claims**



A supervisory equipment for automated machine tools, in which certain machining effects on the tool and/or workpiece are determined by sensor devices, and in which the thus sensed and determined values are compared with predetermined values in the course of the cycle of operation to produce a control signal or signals in the event a sensed value exceeds a predetermined value.

3,809,489

PORTABLE GUIDE JIG FOR HAND DRILL

William J. Harwood, 8545 Sand Beach Rd., Harbor Beach, Mich.

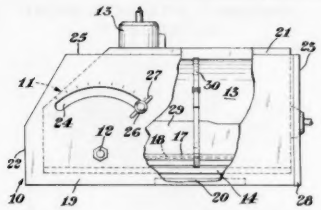
Filed Feb. 1, 1973, Ser. No. 328,561

Int. Cl. B23b *49/00*

U.S. Cl. 408—110 **6 Claims**

A universal portable jig adapted to be hand held and to hold and support a portable electric drill at an adjustable predetermined angle relative to a surface to be penetrated by the bit of said drill which comprises: first and second substantially trough-shaped main support members each having open ends, the second support member being nested in the first support member and pivotally supported thereby; pivoted adjustment being possible by virtue of the floor of the first support member being foreshortened; means for locking the first and

second support members in predetermined pivotal angle relationship; and means for mounting the drill within and to the second support member, said mounting means being slideable



longitudinally of the support member whereby the drill is advanceable towards an end of the jig to allow the bit to be operatively extended.

3,809,490

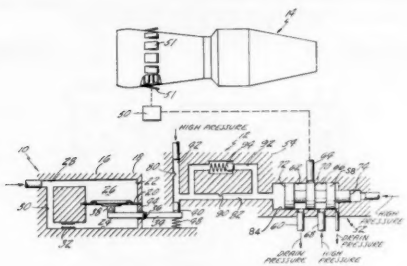
COMPRESSOR SURGE SENSOR

Kermit I. Harner, Windsor, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed May 2, 1973, Ser. No. 356,648

Int. Cl. F01d *17/08, 17/20;* **F02c** *9/02*

U.S. Cl. 415—28 **9 Claims**



The disclosure of this invention relates to means for detecting compressor surge by sensing the pressure downstream of the compressor of a turbine type power plant for rapidly opening the compressor bleeds and holding the bleeds open for brief interval after surge disappears. The sensed pressure is admitted to one side of the diaphragm through a laminar flow restrictor for obtaining a lag time constant which increases as pressure decreases.

3,809,491

CENTRIFUGAL PUMP STRUCTURE

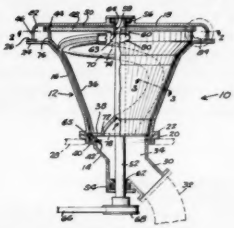
Albert Banyai, 12353 Wyoming, Detroit, Mich.

Filed July 5, 1973, Ser. No. 376,801

Int. Cl. F04d *1/04, 1/12, 1/14*

U.S. Cl. 415—88 **16 Claims**

A tube progressively decreases in sectional area from an inlet to an outlet while spiraling outwardly. The tube is affixed within a bell rotatable on a housing which has an intake chamber adjacent the tube inlet. A shaft journalled on the housing drives the bell. The slope of the tube relative to an axial plane through the shaft progressively increases from inlet



to outlet. The outlet opens into an annular passageway defined by the bell and housing and having a discharge opening for pumped fluid.

3,809,492

REACTION JET HOUSING FOR MARINE PROPULSION SYSTEM

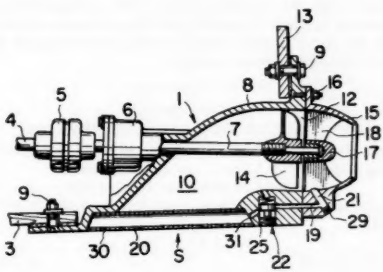
Hisanobu Takaeda, Fukunari, and Atsushi Satomoto, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi Pref., Japan

Filed Aug. 31, 1972, Ser. No. 285,375

Claims priority, application Japan, Sept. 12, 1971, 46-70614

Int. Cl. F01d *15/00;* **B01d** *29/38*

U.S. Cl. 415—121 G **5 Claims**



A marine reaction jet drive having a waterflow passageway including inlet and outlet openings, a propulsion means in the passageway intermediate the inlet and outlet openings, and conduit means separate from the passageway affording communication between the outlet opening or any suitable fluid pressure source and the inlet openings to provide a scavenging waterflow, characterized by a plurality of hollow perforated tubular bars being arranged to provide the inlet openings of the drive in the form of a screen having a series of spaced parallel slots between the inlet openings and the conduit means being connected with the bars to obtain a scavenging injection through the perforations of the bars.

3,809,493

INTERCHANGEABLE COMPRESSOR DRIVE

Karol Pilarczyk, Loudonville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

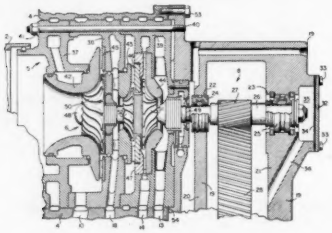
Continuation of Ser. No. 44,403, June 8, 1970. This application Nov. 29, 1971, Ser. No. 202,849

Int. Cl. F04d *25/02, 25/06, 29/44*

U.S. Cl. 415—199 A **1 Claim**

A gear drive and a turbine drive are interchangeably connected to a compressor by means of compatible releasable

fasteners between their respective housings and the compressor casing, and with identical releasable coupling means between the overhung compressor rotor and the output shaft of the gear drive or turbine wheel of the turbine drive. Thus, the sole bearing support for the rotor will be carried by the gear drive and the turbine drive. Accurate axial alignment of the compressor casing with the turbine drive and gear drive is obtained by means of abutting cylindrical surfaces of the drive housing and gear casing in telescopic engagement with an overlapping single cylindrical surface, which is preferably a



fluid guide; for this purpose, the mounting of the drive housing is provided with radial play or radial adjustment. With the overhung rotor and removable barrel assembly comprising the fluid guide elements, the compressor rotor and fluid guide elements may be removed axially from one direction after uncoupling from the respective drive or axially in the other direction with the respective drive. The arrangement and selection of bearings cooperates with the selection of materials for the rotor, turbine wheel, housing and fluid guide elements to balance thermal expansion.

3,809,494

VANE OR BLADE FOR A GAS TURBINE ENGINE

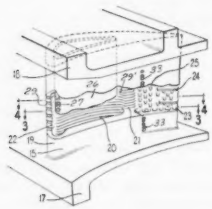
Robert Frederick Redman, Beeston, England, assignor to Rolls-Royce (1971) Limited, London, England

Filed June 26, 1972, Ser. No. 266,508

Claims priority, application Great Britain, June 30, 1971, 30612/71

Int. Cl. F01d *5/08*

U.S. Cl. 416—97 **4 Claims**



A cooled vane or blade for a gas turbine engine comprises a hollow shell with chordwise internal fins which support an air entry tube. The tube receives cooling air from outside the vane and is apertured to allow the air to flow toward the leading and trailing edges of the blade. The trailing edge of the blade is slotted longitudinally to allow the cooling air to escape, and pedestals interconnect the two flanks of the trailing edge portions. Film cooling holes are provided at various locations on the blade.

3,809,495

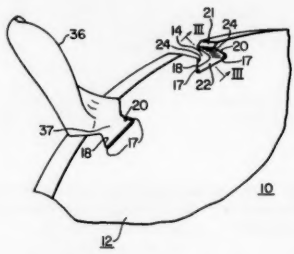
TURBINE ROTOR HAVING CUSHIONED SUPPORT SURFACES FOR CERAMIC BLADES MOUNTED THEREON

William F. Stahl, Media, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 27, 1973, Ser. No. 345,391

Int. Cl. F01d *5/30*

U.S. Cl. 416—135 **7 Claims**



A turbine rotor or disc having ceramic blades mounted thereon. The rotor or disc has a plurality of spaced channels or apertures on its periphery for receiving the roots of the blades. The channels or apertures are serrated to provide compliant or yeildable supports for the roots of the blades.

3,809,496

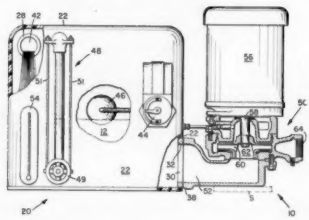
CONDENSATION APPARATUS

Donald J. Hansen, North Aurora, Ill., assignor to General Signal Corporation, Rochester, N.Y.

Filed Aug. 9, 1972, Ser. No. 279,152

Int. Cl. F04b *49/00*

U.S. Cl. 417—40 **8 Claims**



A tank for receiving and storing condensation has walls constructed of a plurality of laminations of fiberglass cloth and epoxy resin. A metallic plate, preferably of an aluminum alloy is molded into one of the walls for supporting a condensate pump. A condensate return opening in the metallic plate is aligned with a supply port in the pump so that condensation may be drawn from the tank by the pump.

3,809,497

CONDUCTION PUMP FOR CONVEYING CORROSIVE METALS

Henri Carbonnel, Antony, and Robert Borie, Sceaux, both of France, assignors to Groupement Atomique Alsacienne Atlantique, Robinson, France

Filed Mar. 16, 1972, Ser. No. 235,278

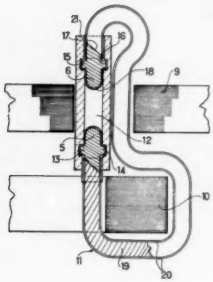
Claims priority, application France, Mar. 16, 1971, 71.09159; Mar. 30, 1971, 71.11143

Int. Cl. H02n *4/20*

U.S. Cl. 417—50 **11 Claims**

Conduction pump having slight bulk, in which a section of the liquid metal flow subjected to magnetic induction is

crossed at the same time by a current, characterized in that the said section of liquid metal flow is limited on two opposite sides by electrodes connected to a current generator circuit, whereas the other sides are made of refractory material. The



electrodes are made of a metal of the VIth group of the periodic classification of elements, protected on the corrosive liquid metal side by a boride or an aluminide, or else the electrodes are made of a refractory material soaked with liquid metal.

3,809,498

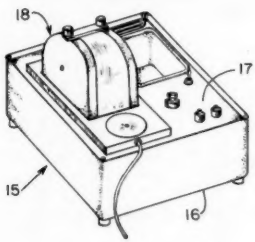
CLOSED WOUND SUCTION SYSTEM

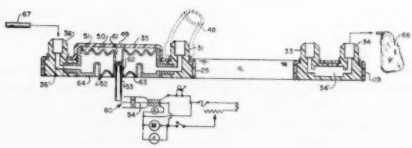
Royce C. Lewis, Jr., 5233 W. 19th St., Lubbock, Tex., and Kelsey Martin, Box 68, Azle, Tex.

Filed Dec. 15, 1972, Ser. No. 315,604

Int. Cl. F04b *21/00, 43/08, 43/12*

U.S. Cl. 417—63 **10 Claims**





Apparatus providing a closed system for moving fluids in post-surgical operations and other instances where cleanliness, sterility, and absence of moving parts are desirable.

The apparatus comprises a pump device having incorporated therein a plate assembly which supports a collapsible looped tube with the tube being flow connected to passageways formed within the plate assembly so that the plate assembly and tube can be discarded after use.

The looped tube is interposed between a removable pressure shoe and a plurality of rollers so that the rollers, when rotating, successively engage and collapse a marginal length of the tube and thereby force fluid contained therein to travel therethrough.

The pressure shoe provides a curved surface against which the rollers may press the looped collapsible tube; provides an attachment means for maintaining the plate member properly positioned relative to the remainder of the apparatus; and, also provides a housing within which the tubing and rollers are protected.

3,809,499

CENTRIFUGAL COMPRESSOR

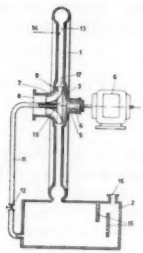
Peter Jacobus Collet, Voorschoten, Netherlands, assignor to Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzock Ten Behoeve Van Nijverheid, Handel En Verkeer, The Hague, Netherlands

Filed June 7, 1972, Ser. No. 260,662

Claims priority, application Netherlands, June 21, 1971, 7108490

Int. Cl. F04b *23/04;* **F04d** *7/00*

U.S. Cl. 417—78 **3 Claims**



The tendency towards instability of a centrifugal compressor with a rotor with fixed bent-forward vanes is decreased in providing in this rotor jet channels for supply of liquid which on rotation form liquid vanes.

The direction of outflow of the jet openings are perpendicular to the axial direction of the rotor and the angle of outflow in respect to the radial direction are equal to the angle of the section of the fixed bent-forward vanes that is situated at the same diameter in the same plane of revolution.

3,809,500

METHOD AND APPARATUS FOR REGULATING PUMPS

Georg Staudenrausch, Rissegg, Germany, assignor to Albert Handtmann Metallgusswerk, Armaturen- und Fleischereimaschinenfabrik, Biberach, Germany

Filed Sept. 7, 1972, Ser. No. 286,951

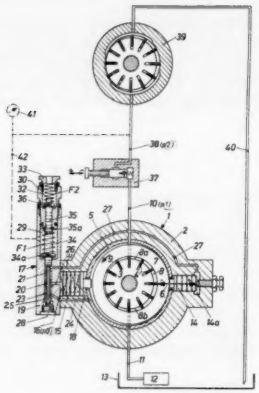
Claims priority, application Germany, Feb. 25, 1972, 2208877

Int. Cl. F04b *1/26*

U.S. Cl. 417—222 **14 Claims**

Apparatus for regulating the discharge pressure of adjustable pumps by modifying the discharge capacity by means of a control device which is dependent on consumed load. The control device comprises an element which is positionable in a first direction through the pump discharge pressure and in a second direction opposite thereto in response to a force

formed by the consumed working load pressure and a given spring bias. The control means is further urged in its second



direction by a bias which is removed on reaching a given minimum of discharge pressure so that the first forces are responsive only above such pressure.

3,809,501

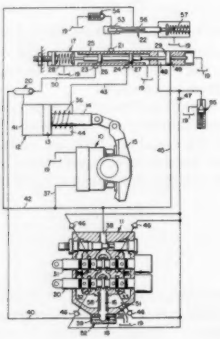
HYDRAULIC LOAD SENSITIVE SYSTEM

Charles O. Weisenbach, Watertown, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed Jan. 8, 1973, Ser. No. 321,615

Int. Cl. F04b *1/26*

U.S. Cl. 417—222 **12 Claims**



A hydraulic load sensitive system is provided having a variable delivery pump, the output of which is controlled by an open-center control valve. Load sensitive control apparatus is provided including a control cylinder having a piston for operating a control cam of the variable delivery pump. First and second feedback circuits are provided to govern operation of the control cylinder alternately, the first feedback circuit including an open-center position of the control valve and the second feedback circuit including a circuit through a pressure differential valve.

3,809,502

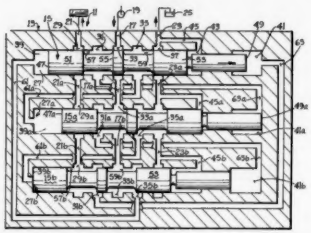
PRESSURE TRANSFORMER

Augustus P. Henry, Irvine, Calif., assignor to Bertea Corporation, Irvine, Calif.

Filed Apr. 6, 1973, Ser. No. 348,861

Int. Cl. F04b *17/00*

U.S. Cl. 417—225 **16 Claims**



A pressure transformer including a plurality of pistons. Each of the pistons is driven through a working stroke and a return stroke by fluid under pressure and acts as a fluid motor. Each of the pistons is supplied with fluid, and on the working stroke, the piston increases or decreases the pressure of the fluid supplied thereto. Each of the pistons also serves as a valve to control the movement of one of the other pistons.

3,809,503

FAN CONSTRUCTION

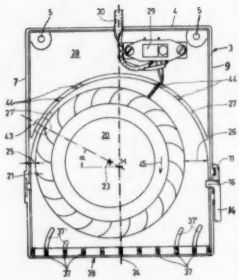
Volker Schlicker, St. Georgen, and Gunter Wrobel, Villingen, both of Germany, assignors to Papst-Motoren Ltd., Co., St. Georgen, Germany

Filed July 31, 1972, Ser. No. 276,855

Claims priority, application Germany, Aug. 4, 1971, 2139036

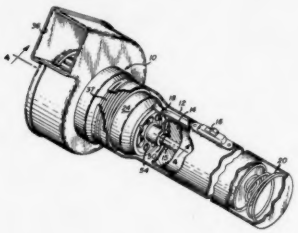
Int. Cl. F04b *17/00*

U.S. Cl. 417—352 **19 Claims**



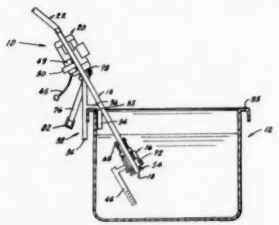
A fan, particularly a portable fan, includes a substantially square flat casing having a top wall with an inlet and substantially parallel side walls and front and rear walls. The front wall is provided with an open front face for the discharge of the air from a radially operating motor driven fan wheel which is positioned within the casing in an eccentric arrangement. The casing is provided with a partition wall on the rear wall side of the fan which is substantially cylindrical and the axis of the fan is located so that the clearance between the periphery of the fan and the adjacent side wall at one side is less than at the opposite side. The fan is also oriented so that its axis is positioned at a greater distance toward the curved partition wall on the closer spacing side than the opposite side so that an inwardly spiralling flow path in the form of a volute is provided from one side toward the other.

3,809,504
BLOWER HEAD FOR FLASHLIGHT
Donald Leonard Goossens, 691 Lakehaven Dr., Sunnyvale, Calif.
Filed Sept. 5, 1972, Ser. No. 286,011
U.S. Cl. 417—411 5 Claims



A blower head for attachment to the battery housing of an ordinary flashlight and including a centrifugal blower which is driven by a motor contained within a motor housing which is itself adapted to mate with the battery housing and includes electrical contacts adapted to engage the battery terminal and the switching electrode of the battery housing in substantially the same manner as does the lamp assembly of the flashlight.

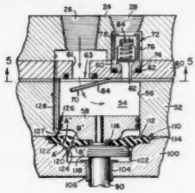
3,809,505
BITUMEN PUMPING APPARATUS
Dobson, Sr., Richard D., and Clyde J. Clifton, both of Wichita, Kans., assignors to Ron J. McGraw, El Dorado, Kans.
Filed Jan. 24, 1972, Ser. No. 220,221
Int. Cl. F04b 35/04
U.S. Cl. 417—424 8 Claims



A pumping apparatus with a pump and driver mounted on a frame and connected to a two-position valve and valve control, and with a conduit through the frame connected to the valve to convey liquid from the tank.

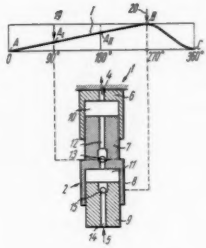
3,809,506
HERMETICALLY SEALED PUMP
Norman D. Malcosky, Columbus, Ohio, assignor to Columbia Gas System Service Corporation, Wilmington, Del.
Filed Dec. 11, 1972, Ser. No. 313,756
Int. Cl. F04b 21/02, 39/00
U.S. Cl. 417—439 15 Claims

A hermetically sealed pump includes a cylinder that defines a piston chamber for a reciprocating piston driven through an eccentric cam member and a cam follower operatively connected between the piston and the cam. A fluid manifold is associated with the piston cylinder and has suction and discharge ports located in communication with the piston chamber for supplying fluid to and discharging fluid from that chamber, and a pair of valves are operatively associated with these ports for simultaneously opening one of the ports and closing the other of the ports, in response to pressure in the



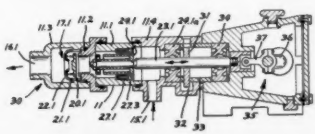
piston chamber. A toroidally shaped rolling diaphragm hermetically seals the piston chamber on the side of the piston opposite the ports, thereby to prevent loss of fluid in the pump through the piston chamber.

3,809,507
NONPULSATING FLUID-FLOW PUMP
Boris Ivanovich Baglai, prospekt Oktyabrya, 133, kv. 32, Ufa, U.S.S.R.
Filed Mar. 1, 1972, Ser. No. 230,751
Int. Cl. F04s 19/00, 37/00
U.S. Cl. 417—488 5 Claims



A pump incorporating consecutive pairs intercommunicating through channels. One element of the first pair is fixed while the other element of said pair is movable and rigidly connected with one of the elements of the next pair, the other element of which is also movable. The number of such pairs may be more than two. All the movable elements of the pairs of kinematically linked with a shaped cam which sets said elements in motion. The pump is provided with a changeover device for communicating the metering volumes of said pairs.

3,809,508
PUMP
Ryoji Uchiyama, Ichikawa, Japan, assignor to Maruyama Mfg. Co., Ltd., Tokyo, Japan
Filed Dec. 6, 1971, Ser. No. 205,146
Int. Cl. F04b 7/00
U.S. Cl. 417—511 2 Claims



A reciprocating pump with a reciprocable rod with a disc valve thereon, a tube loosely knotted on the rod to seat one

end against the disc valve, a liquid pervious retainer for the tube on the rod and allowing movement of the tube away from the disc valve, and a stationary seal in the pump housing encompassing the tube in sealing relation and preventing longitudinal reciprocation of the tube within the seal.

3,809,509

ROTARY PISTON INTERNAL COMBUSTION ENGINE, ESPECIALLY OF TROCHOIDAL CONSTRUCTION

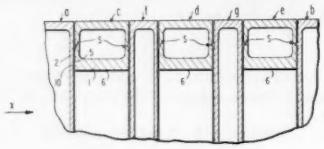
Heinz Lamm, Esslingen St. Bernhardt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany

Filed Apr. 14, 1971, Ser. No. 133,884

Claims priority, application Germany, Apr. 14, 1970, 2017769

Int. Cl. F01c *19/00*; **F04c** *15/00, 27/00*

U.S. Cl. 418—60 **20 Claims**



A rotary piston internal combustion engine, especially of trochoidal construction which essentially consists of lateral parts and of at least one casing housing, in case of multi-disk internal combustion engines of one or several intermediate parts, with a gas-sealing element arranged between the end flanks of the lateral part, possibly of the intermediate part, and the casing housing; the end flanks of casing housing and/or of the lateral part, respectively, intermediate part, are provided with a recess, in which are accommodated metallic gas-sealing elements that consist of a material with high heat conductivity.

3,809,510

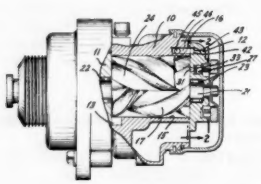
COMBINATION PRESSURE RELIEF AND ANTI-SLUGGING VALVE FOR A SCREW COMPRESSOR

David A. Gregerson, Richmond, Ind., and Vinod K. Arora, Dayton, Ohio, assignors to Philco-Ford Corporation, Blue Bell, Pa.

Filed Mar. 22, 1973, Ser. No. 343,871

Int. Cl. F04b *23/14*

U.S. Cl. 418—201 **6 Claims**



A combination pressure relief and anti-slugging port is so positioned relative to the main discharge port of a screw compressor that, as the screws are rotated, the main rotor lobe first exposes the pressure relief port while the main discharge port remains covered by an adjacent gate rotor lobe, followed by the rotating lobes uncovering both ports simultaneously, and by covering of the relief port by the main rotor lobe as the main discharge port remains uncovered by the gate rotor lobe. A valve is provided in the pressure relief and anti-slugging port so that the compressed gas can be discharged therefrom, in the event the built-in compression ratio exceeds the operating compression ratio, while the relief port alone is uncovered.

3,809,511

VALVE ARRANGEMENT FOR A COMPRESSOR

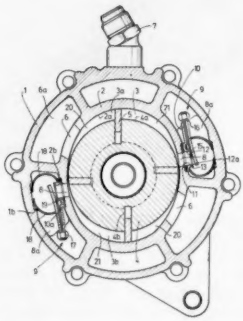
Ernst Linder, Muehlacker; Gerhard Adalbert, and Juergen Hess, both of Markgroeningen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 24, 1973, Ser. No. 354,135

Claims priority, application Germany, May 3, 1972, 2221541

Int. Cl. F01c *21/12*; **F16k** *25/00*

U.S. Cl. 418—259 **10 Claims**



The axially aligned outlet openings in an endless inner housing wall surrounding the vane rotor of a compressor, are connected by valves with a housing space between the inner housing wall and an outer housing wall having a discharge outlet. All valves are mounted on a common valve plate which slidingly engages the inner wall while a pair of springs fixedly abut the common valve plate, and slidingly abut the outer housing wall so that a valve unit is formed by the springs, valve plate and valves, which can be removed from and inserted into the housing in axial direction.

3,809,512

APPARATUS FOR THE CONTINUOUS PRODUCTION OF STRANDS OF POLYMERIC FOAM

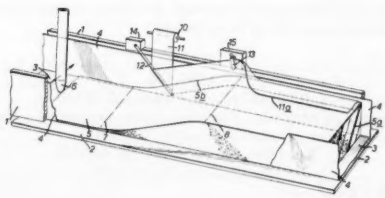
James Brian Blackwell; Dennis Killen, and Victor Francis Hodgson, all of Stockport, England, assignors to Uniform A.G., Glarus, Switzerland

Division of Ser. No. 219,645, Jan. 21, 1972, which is a continuation-in-part of Ser. No. 719,957, April 9, 1968, abandoned. This application July 26, 1972, Ser. No. 275,213

Claims priority, application Great Britain, Apr. 12, 1967, 16670/67; June 9, 1967, 26718/67; Dec. 13, 1967, 56762/67

Int. Cl. B29d *27/00*

U.S. Cl. 425—4 C **8 Claims**



Apparatus for the continuous production of strands of polymeric foam. Strands of foam are produced by depositing liquid foam reactants onto an open-topped continuous trough conveyor and a flat top surface to the foam is achieved by introducing guide sheets between the sides of the trough con-

veyor and the foam and raising and controlling the guide sheets so that they are always in accurate registration with the rising foam. The guide sheets are introduced downwardly into the trough conveyor and then passed around respective straight fold bars the attitudes of which are adjustable. The guide sheets thereafter follow upwardly inclined paths, corresponding to the rising level of the foam, and are advanced by pull rolls which are also adjustable in attitude. The positions along the trough conveyor of the fold bars and the pull rolls can be adjusted. Preferably, the guide sheets are sheets of thin plastics material, e.g. polyethylene.

3,809,513

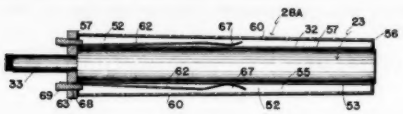
MACHINE FOR MANUFACTURING HOLLOW CORE STRUCTURES OF CONCRETE AND THE LIKE

Frederick Sellers; Marvin Thorsteinson, and Ernst Martens, all of Winnipeg, Manitoba, Canada, assignors to Spiroll Corporation Ltd., Winnipeg, Manitoba, Canada

Continuation-in-part of Ser. No. 243,159, April 12, 1972, abandoned. This application Oct. 10, 1972, Ser. No. 296,189

Int. Cl. B28b *21/36*

U.S. Cl. 425—84 **10 Claims**



A mould has a removeable wall so that concrete can be poured therein. A plurality of mould core assemblies are insertable in the mould and are surrounded by the concrete mix. Fluid under pressure expands elastic sleeves surrounding the mould cores and thus compresses the concrete against the walls of the mould. Water extraction members are also insertable in the mould and are also surrounded by concrete. These members may either be separate from or formed part of the mould core assemblies. Filtering material surrounds these members so that free water expressed by the compression of the concrete can drain or be evacuated by these members thus causing the concrete to be compressed into a semi-rigid and relatively dry state so that it can be removed from the mould. Concrete structures formed this way are accurate as to all external dimensions.

3,809,514

MACHINE FOR THE CONTINUOUS MANUFACTURE OF HOLLOW ELEMENTS

Julio De Castro Nunez, Arrieta 7, Madrid, Spain

Filed Nov. 9, 1972, Ser. No. 305,138

Claims priority, application Spain, Nov. 13, 1971, 397.008; July 7, 1972, 404.657

Int. Cl. B29c *3/02*

U.S. Cl. 425—112 **7 Claims**

The present invention relates to the moulding of a hollow element which is made on a mould equipped with rotary means on its periphery which impart to a continuous band supported on the said means a helicoidal movement that imparts to the layer of the hollow element on the surface thus formed a continuous longitudinal and rotary displacement, following the said movement.

3,809,515

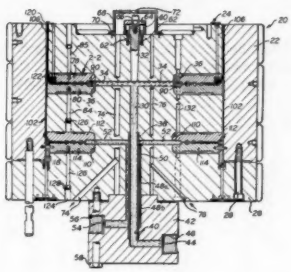
EXTRUSION DIE FOR BLOWING PLASTIC FILM

John J. Farrell, Greenbrook, N.J., assignor to Farrell Patent Company, Dunellen, N.J.

Filed Mar. 3, 1972, Ser. No. 231,501

Int. Cl. B29f *3/12*

U.S. Cl. 425—133 **20 Claims**



This die for blowing plastic film obtains better mixing of the plastic from different supply lines before extrusion and thus avoids visible "weld lines" in the finished film. The improved mixing results from the use of generally spiral passages leading from the supply passages to the cylindrical clearance that forms the discharge outlet of the die. The spiral passages are formed by grooves in an annular plate located between the core supply passages and the cylindrical clearance through which the plastic flows to the die outlet. The grooved surface of the place touches a confronting surface near the inner edge of the plate but the confronting surfaces diverge slightly as they extend outward so that plastic can leak radially across space between spiral grooves and into the cylindrical clearance that leads to the die discharge outlet. Adjustments of passage cross sections obtain uniform thickness of the blown film.

3,809,516

APPARATUS FOR MANUFACTURING A LIGHT-WEIGHT CONCRETE PANEL WITH PATTERN DESIGNS ON ITS SURFACE

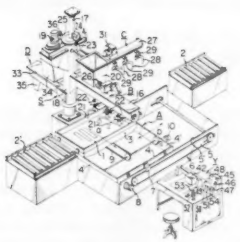
Saiji Komaki, No. 1, Nagayoshi-cho, Kagoshima-shi, Japan

Filed Dec. 8, 1971, Ser. No. 205,819

Claims priority, application Japan, Mar. 30, 1971, 46-18868; Mar. 30, 1971, 46-18869; May 21, 1971, 46-34547; Sept. 10, 1971, 46-70250; Dec. 31, 1970, 45-134896

Int. Cl. B28b *17/00;* **B05b** *7/08*

U.S. Cl. 425—150 **3 Claims**



A light-weight concrete panel, with patterns on its surface, is produced automatically by positioning a mold in operative relation with materail supply devices including a device for supplying a pattern material, a device for directing air against an applied pattern and a device for applying concrete into the

mold. The device for applying the pattern material, and movement of the mold, are controlled by scanning of a master pattern. The pattern material may be dies. The supply devices, including troughs, material feeders, and discharge spouts are mounted on horizontal arms extending from an upright pillar, and the pillar may be rotatable to position the several supply devices in operative relation with the mold.

3,809,517

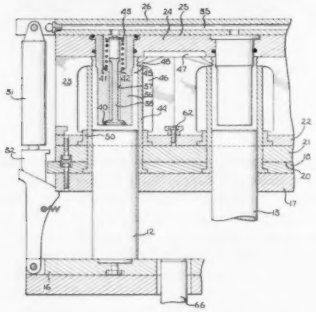
BLOW INJECTION APPARATUS

Robert F. Schneider, Los Angeles, Calif., assignor to Synthetic Electronic Technology Co., Inc., Los Angeles, Calif.

Filed Feb. 28, 1972, Ser. No. 229,629

Int. Cl. B29d *23/03*

U.S. Cl. 425—242 B **4 Claims**



A blow forming apparatus is disclosed herein in which a molten plastic is forcibly injected into the shaped cavity of a closed blowing mold that is supported in a stationary location. A sleeve is movably carried on the ejector assembly of the apparatus so that its cylindrical wall divides the mold cavity into a first chamber occupied by the injected parison and a second outer chamber into which the parison is blown into the desired body shape after removal of the sleeve from the cavity. The sleeve also serves as an ejector sleeve for effecting separation of the blown body from the blowing station or mold once the formation of the body has been completed, then continues to move up into position for the next cycle.

3,809,518

PRODUCTION OF BODIES FROM SYNTHETIC PLASTICS MATERIALS

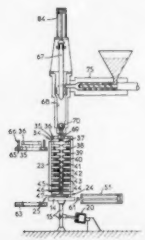
Brian Edwin Lloyd, Sedgley, and Barry John Marsh, Penkridge, both of England, assignors to GKN Group Services Limited, Worcester, England

Filed Feb. 28, 1972, Ser. No. 229,839

Claims priority, application Great Britain, Mar. 1, 1971, 5736/71

Int. Cl. B29c *1/00*

U.S. Cl. 425—244 **7 Claims**



The specification discloses a cyclic method of, and apparatus for, the production of bodies, particularly preforms for further shaping, of synthetic plastics material. There is provided a series of inter communicating mould cavities and plastics material is injected into the cavity at the input end of the series by decreasing the volume of an accumulator chamber to which the material is continuously fed. The volume of the chamber is allowed gradually gradually to increase as more material is fed into it after the cavity at the input end has been filled while the series of mould cavities is still connected to the chamber whereby material is fed into the series from the accumulator chamber to prevent the formation of voids due to shrinkage. The series is only disconnected from the accumulator chamber while an empty mould cavity is being provided at the input end of the series and an article removed from the output end thereof so that the formation of voids due to shrinkage is substantially avoided.

3,809,519

INJECTION MOULDING MACHINES

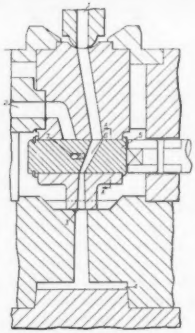
Paul Johnson Garner, Thorpe Bay, England, assignor to Imperial Chemical Industries, Limited, London, England

Continuation-in-part of Ser. No. 132,971, April 12, 1971, which is a division of Ser. No. 781,763, Oct. 6, 1968, Pat. No. 3,599,290. This application Oct. 19, 1972, Ser. No. 299,123

Claims priority, application Great Britain, Dec. 15, 1967, 57081/67

Int. Cl. B29f *1/03*

U.S. Cl. 425—245 **6 Claims**



A multiway valve in a "two-shot" injection moulding machine having separate tapered passageways for alternately connecting the sources of material with a single outlet. The valve also has a shut-off position wherein neither source is connected to the outlet.

3,809,520

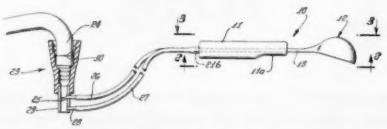
FLUID HEATED SCOOP

Richard B. Wilk, 4384 Via Presada, Santa Barbara, Calif., and Jack J. Hill, 1056 Latin Way, Los Angeles, Calif.

Filed Feb. 22, 1972, Ser. No. 228,161

Int. Cl. A23g *5/02*

U.S. Cl. 425—276 **4 Claims**



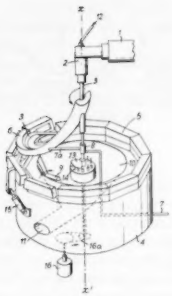
An ice cream scoop bowl contains an interior fluid circulation passage having an inlet and outlet for fluid to circulate therethrough in heat transfer relation to the bowl. The interior passage configuration affords unusual advantages.

3,809,521

APPARATUS FOR BLOW MOULDING

Claude LaFosse, Chalon Sur Saone, France, assignor to Saint-Gobain Carnaud Interplastic, Neuilly-Sur-Seine, France

Filed Mar. 6, 1973, Ser. No. 338,597
Claims priority, application France, Mar. 9, 1972, 72.08177
Int. Cl. B29d *23/03*
U.S. Cl. 425—326 B 9 Claims



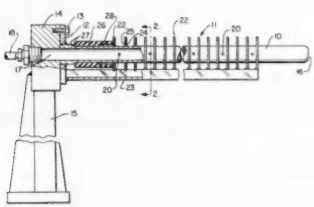
Apparatus for blow moulding of plastics materials has a duct rotatable about a fixed extrusion head to deposit an extruded tube in a series of fixed moulds arranged in a ring. The duct may be supplied with a cooling fluid to adjust the temperature of the tube. Simple operation and high production speeds can be achieved.

3,809,522

APPARATUS FOR MAKING CORRUGATED TUBING

Vance M. Kramer, 402 E. Boundry Rd., Perrysburg, Ohio

Filed Jan. 5, 1972, Ser. No. 215,612
Int. Cl. B29c *17/00*
U.S. Cl. 425—387 5 Claims



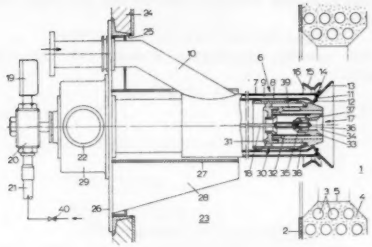
An apparatus for making corrugated rubber tubing in which embryonic corrugations are formed in a sleeve of uncured rubber by sliding the sleeve axially into the annular space between a mandrel and a forming member having no moving parts that surrounds the mandrel and in fixed, concentric relation thereto. The forming member provides immovable edge means and intervening spaces against which the sleeve is expanded by fluid pressure to form the embryonic corrugations. The sleeve is then removed from the annular space, axially collapsed to form the corrugations and then cured to set the corrugations.

3,809,523

METHOD AND APPARATUS FOR COOLING THE FLAME OF AN INDUSTRIAL GAS BURNER

Willem Varekamp, Soest, Netherlands, assignor to Ingenieursbureau Rodehuis & Verloop N.V.

Filed Sept. 1, 1972, Ser. No. 285,857
Claims priority, application Netherlands, Jan. 6, 1971, 7100208
Int. Cl. F23j *7/00*
U.S. Cl. 431—4 5 Claims



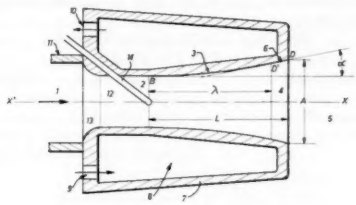
A method of cooling the flame of an industrial burner for gaseous fuel in which a gas burner is used having a ring-shaped gas-outflow opening and a flow of atomized water is sprayed from the centre of the burner mouth substantially axially into the annular flame burning at the gas-outflow opening.

3,809,524

INJECTION OF LIQUID FUELS INTO SHAFT FURNACES

Paul Bruhlet, Nilvance, and Gerard Quillet, Thionville, both of France, assignors to Compagnie Francaise de Raffinage, Paris, France

Filed July 7, 1972, Ser. No. 269,556
Claims priority, application France, July 8, 1971, 71.25093
Int. Cl. F23c *5/08*
U.S. Cl. 431—181 18 Claims



Method and apparatus capable of atomizing and mixing large, even stoichiometric, amounts of liquid fuel (with or without oxygen) in the blast of tuyeres supplying a shaft furnace without ignition of the mixture prior to reaching the furnace, accomplished by atomizing the fuel by injection into a blast having a speed of between mach 0.3 and mach 1 and thereafter reducing the speed of the blast to velocities acceptable for supplying the furnace requirements, before ignition of the fuel can occur, by constantly increasing the cross-section of the tuyere conduit in a smooth curve to give a flow path without recirculation streams. In a further aspect of the invention, any generatrix of the conduit is wholly convex with the tangent at the discharge end forming an angle of at most 15° to the axis of generatrix.

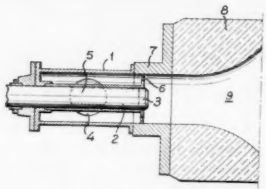
ERRATUM

For Class 431—256 see:
Patent No. 3,808,741

3,809,525
FLAT-FLAME BURNER UTILIZING HEAVY LIQUID FUELS

Robert Wang, Saint-Germain-en-Laye, both of, and Jean-Marie Pariel, Saint-Germain-En-Laye, both of France, assignors to Societe Anonyme Heurtey and Elf Union, Paris, France

Filed Feb. 20, 1973, Ser. No. 333,796
Claims priority, application France, Feb. 23, 1972, 72.06075
Int. Cl. F23d *15/02*
U.S. Cl. 431—353 **4 Claims**

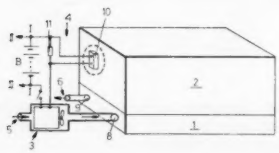


The invention relates to a flat-flame burner in which the special geometrical configuration of the burner components for introducing the fuel and the combustion air ensure proper mixing thereof and the required geometrical shape of the flames over a wide range of operating conditions.

3,809,526
HEATING UNIT

Bjarne Nordli, Hammerstad, 2080 Eidsvoll; Tor Audun Oftedal, Holtegt 24, Oslo 3, and Erik A. Wulvik, Odalsgt 4,, 2000 Lillestrom, all of Norway

Filed May 3, 1973, Ser. No. 356,990
Int. Cl. F27b *17/00*
U.S. Cl. 432—36 **14 Claims**

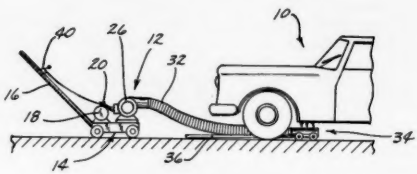


Heating unit suitable for being placed in thermal contact with an object to be heated, that comprises a fuel element substantially consisting of carbon and which is arranged in a box of heat conducting material with a layer of heat insulating material between the fuel element and the box, ignition means and air supply means arranged to supply combustion air during and after ignition, so that the air flow is defined resulting in predetermined heat effect.

3,809,527
PORTABLE HEATER FOR AN AUTOMOBILE

Roger Newman, 517 94th Ave., Omaha, Nebr.

Filed Apr. 16, 1973, Ser. No. 351,604
Int. Cl. F27b *17/00*
U.S. Cl. 432—62 **3 Claims**

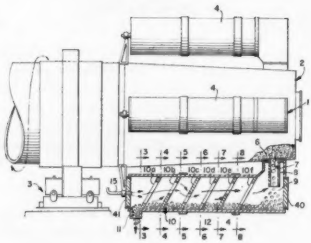


A portable heater for an automobile or the like comprising a first wheeled support having a gas heater mounted thereon. A blower is in communication with the heater and has an elongated flexible tube means extending therefrom. The outer end of the tube means is supported by a second wheeled support having an elongated handle extending therefrom. The outer end of the tube means is adapted to direct the heated air upwardly onto the oil pan of the automobile to assist in starting the automobile during periods of cold weather.

3,809,528
APPARATUS FOR COOLING SOLID PARTICULATE MATERIAL

Douglass J. Kramm, Allentown, Pa., assignor to Fuller Company, Catasauqua, Pa.

Filed Sept. 4, 1973, Ser. No. 394,214
Int. Cl. F27b *7/02, 7/14*
U.S. Cl. 432—80 **6 Claims**



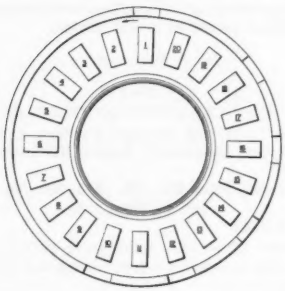
Apparatus for cooling solid particulate material treated in a kiln comprising a plurality of elongated cylinders attached to the periphery of a rotary kiln. Particulate material is discharged from the kiln into the material inlet of the cooler while cooling air is introduced into the cooler countercurrent to the material flow. The particulate material is uniformly advanced from the material inlet to the outlet by means of a helical plate means which is continuous throughout its length. Annularly offset openings in the plate means deflect the cooling air from its initial flow path in order to increase the rate of heat transfer between the cooling gas and the particulate material, plate means and walls of the cooler. The plate means

is easily manufactured and installed. The plate means is designed to prevent clogging by the particulate material. The interior of the cooler and the entire plate means are easily accessible for maintenance or repair by means of access doors near the material inlet and outlet. Spent gas is returned to the kiln to be used as preheated air of combustion.

3,809,529
ENDLESS FURNACE

Henry A. Gornall, Lyndhurst, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 167,002, July 28, 1971, abandoned, which is a division of Ser. No. 853,336, Aug. 27, 1969, Pat. No. 3,649,327. This application Oct. 26, 1972, Ser. No. 301,119
Int. Cl. F27b *9/00*
U.S. Cl. 432—138 **13 Claims**



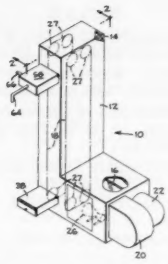
An endless porcelain enameling tunnel furnace having an inner and outer periphery, a plurality of ports positioned along said outer periphery in spaced relationship to each other to permit entry and removal of a work place to be placed in said furnace, an internal radiant heat means, and internal means for continuously advancing work pieces to be enameled.

3,809,530
DRYING APPARATUS

William A. Gerrans, Colusa, Calif., assignor to Carl J. Fusco, Santa Rosa, Calif.

Filed Jan. 3, 1972, Ser. No. 214,578
Int. Cl. F27b *9/24*; **F26b** *11/18*
U.S. Cl. 432—152 **13 Claims**

Drying apparatus which includes a housing forming a continuous closed-loop conduit within which a drying fluid can be recirculated over a product placed within the housing, the housing incorporating means enabling continuing egress of

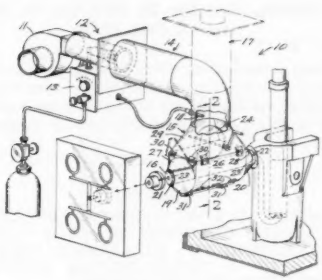


moisture to the exterior environment without substantial heat loss.

3,809,531
DIE CASTING APPARATUS

Melvin A. Jones, Lake Mohawk R.R. No. 1, Tiffin, Ohio

Filed June 4, 1973, Ser. No. 366,645
Int. Cl. F27b *9/36*
U.S. Cl. 432—225 **7 Claims**



The invention relates to heater apparatus for controlling the temperature of the melt within the nozzle or transfer tube of a die casting machine. The apparatus employs thermostatically-controlled heated gases which flow into an enclosure surrounding the nozzle, maintain the nozzle within a predetermined temperature range, and are either exhausted from the enclosure or are recycled back to the heater. The enclosure includes a damper deflector and walls which are readily retractable for access to the nozzle.

3,809,532

PROCESS FOR DYEING FIBRE MIXTURES OF POLYESTER AND WOOL

Heinz Abel, Reinach, Basel-Land, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Continuation of abandoned application Ser. No. 849,859, Aug. 13, 1969. This application July 7, 1972, Ser. No. 269,652

Claims priority, application Switzerland, Aug. 16, 1968, 12,364/68

Int. Cl. D06p *3/82*

U.S. Cl. 8—21 C **8 Claims**

Mixture of polyester fibres and wool are dyed simultaneously with disperse dyestuffs and wool dyestuffs in the presence of sodium o-phenylphenolate, a levelling agent, and a wool reserve agent. The sodium o-phenylphenolate promotes the penetration of the disperse dyestuff into the polyester fibres and the other additives prevent demixing of the o-phenylphenolate carrier.

3,809,533

ETHOXYETHANOL, GLYCOL, WATER DYE SOLUTION

Frederic L. Sievenpiper, Alden, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Apr. 28, 1972, Ser. No. 248,554

Int. Cl. C09b *67/00*

U.S. Cl. 8—93 **1 Claim**

A liquid solvent composition containing an organic dye, especially suitable for solvent dyeing operations, comprises 40–80 volume percent alkoxyl alkanol, 5–40 volume percent of an alkylene glycol and 2 to 25 volume percent of water.

3,809,534

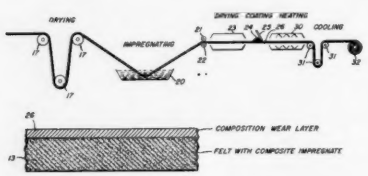
PROCESS OF MAKING INDENTATION RECOVERY POLYVINYL CHLORIDE SURFACE COVERING BY REACTING THE CELLULOSIC FELT BACKING WITH A CROSS-LINKING AGENT AND PRODUCT PRODUCED THEREBY

Leon B. Palmer, Little Falls, N.J., assignor to Congoleum Industries, Inc., Kearny, N.J.

Continuation-in-part of application Ser. No. 786,542, Dec. 6, 1968, which is a continuation-in-part of application Ser. No. 459,518, May 17, 1965, which in turn is a continuation-in-part of application Ser. No. 15,477, Mar. 16, 1960, all now abandoned. This application July 6, 1971, Ser. No. 159,768

Int. Cl. B32b *31/00;* **D06n** *3/06*

U.S. Cl. 8—115.6 **6 Claims**



This invention relates to a process for producing a surface covering having high indentation resistance and recovery from indentation and having in combination a resilient thermoplastic polyvinyl chloride composition wear-resistant surface layer having a thickness of at least 0.003 inch and a fibrous backing having a gauge-to-weight ratio of 0.8 to 1.2 and a thickness of from 0.025 to 0.060 inch which process comprises impregnating a protein-free cellulosic fibrous sheet with a uniformly dispersed resinous water-resistant and strengthening impregnant, incorporating within the cellulosic fibers of the fibrous sheet a difunctional, non-resinous, water-soluble reagent capable of cross-linking at least some of the hydroxy groups of the cellulosic fibers, and an acid catalyst, heating the fibrous sheet to cross-link at least some of the hydroxy groups, and applying a wear-resistant surface layer to the fibrous sheet, thereby crosslinking at least as many of the free hydroxyl groups as is necessary to provide at least about a 50% recovery within the 5 minute period from an indentation produced by applying a 100 pound load through a 0.75 inch spherical pin for 5 minutes to the surface covering. Also, the disclosure relates to the product produced in this manner.

3,809,535

DRY CLEANING OF TEXTILES

Jean Neel, Lyon, and Bernard Papillon, Lyon-la-Mulatiere, France, assignors to Societe Rhone-Progil, Paris, France

No Drawing. Filed Dec. 15, 1971, Ser. No. 208,436

Int. Cl. D06l *1/00*

U.S. Cl. 8—142 **5 Claims**

A method of washing solid, more particularly textile articles, with an organic solvent, improved by adding an intensifier.

The intensifier is a primary or secondary amide of a dicarboxylic aliphatic acid or anhydride wherein one carbon atom in the chain connecting the two acid groups bears an alkyl or alkenyl radical containing at least six carbon atoms.

The method gives better whiteness and more particularly prevents the re-deposition of dirt.

3,809,536

RECIRCULATION BACK TO SOLVENT DYE BATH OF AN AQUEOUSLY SEPARATED HALOHYDROCARBON-ALKYLENE GLYCOL ETHER MIXTURE WITH FURTHER HALOHYDROCARBON REMOVING WATER FROM THE ETHER

Frederick L. Sievenpiper, Alden, N.Y., and Elmore L. Bement, Stanley, N.C., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Mar. 30, 1972, Ser. No. 239,753

Int. Cl. D06p *5/00*

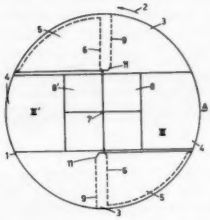
U.S. Cl. 8—173 **6 Claims**

A process for recovering organic liquids used in solvent dyeing operations of textiles is described. The organic liquid solvents comprise a water-soluble component and a water insoluble component which, as residual liquors from the solvent dyeing operation contain a small amount of water accumulated during the dye operation from the textile being dyed and form an azeotropic mixture when recovered by distillation. The mixture is recovered as is components by addition of water to separate the water insoluble components, followed by distillation. The water and the water-soluble component also form an azeotrope from which the soluble organic component is recovered by the addition of an entrainer followed by distillation. Both organic components may then be recycled to the solvent dyeing process.

3,809,537
TEST FOR LEAD
Angela A. Horine, 1675 Clay Drive, Los Altos, Calif. 94022
No Drawing. Filed May 2, 1972, Ser. No. 249,638
Int. Cl. G01n *21/04*
U.S. Cl. 23—230 R 6 Claims

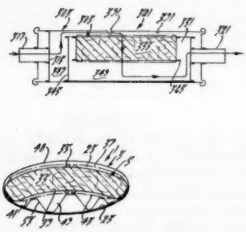
Lead in concentrations in the range 4–40 p.p.m. in aqueous solution of pH 1–5 is visually detected by adding a solution of a soluble sulfide.

3,809,538
ROTARY COUNTERCURRENT SOLID-LIQUID EXTRACTION APPARATUS
Georges F. Duchateau, Tienen, Belgium, assignor to Raffinerie tirlemontoise, Brussels, Belgium
Filed June 28, 1971, Ser. No. 157,224
Claims priority, application Luxemburg, July 3, 1970, 61,261/70
Int. Cl. B01d *11/02*
U.S. Cl. 23—269 9 Claims



A method for extracting, by means of a liquid, products which are part of solids in a partitioned rotating extractor, with the flow of the liquid fraction separated from the solids fraction being slowed down by baffles and said liquid fraction being spread over the length and width relative to the new solids fraction.

3,809,539
DOWNFLOW CATALYTIC CONVERTER FOR ENGINE EXHAUST GASES
Robert N. Balluff, Rives Junction, and James D. Stormont, Grass Lake, Mich., assignors to Tenneco Inc., Racine, Wis.
Filed Mar. 13, 1972, Ser. No. 234,009
Int. Cl. B01j *9/04*; F01n *3/14*
U.S. Cl. 23—288 F 30 Claims

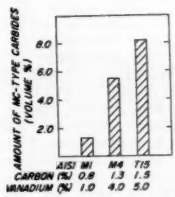


A catalyst converter for an internal combustion engine exhaust system has a curved downflow catalyst bed in which the inlet wall is provided by a portion of a cylindrical shell inside an outer housing and the outlet wall is provided by a similarly curved plate carried by the shell, there being slip connections to permit relative heat expansion and contraction of the parts.

3,809,540
SINTERED STEEL BONDED TITANIUM CARBIDE TOOL STEEL CHARACTERIZED BY AN IMPROVED COMBINATION OF TRANSVERSE RUPTURE STRENGTH AND RESISTANCE TO THERMAL SHOCK
M. Kumar Mal, Spring Valley, and Stuart E. Tarkan, Monsey, N.Y., assignors to Chromalloy American Corporation, West Nyack, N.Y.
No Drawing. Filed Dec. 29, 1972, Ser. No. 319,151
Int. Cl. C22c *1/05, 29/00*
U.S. Cl. 29—182.8 4 Claims

A sintered steel-bonded titanium carbide composition characterized by an improved combination of transverse rupture strength, resistance to impact, and resistance to thermal shock is provided comprising by weight about 20% to 30% of primary grains of titanium carbide dispersed through a steel matrix making up the balance, the composition of said matrix consisting essentially by weight of about 3% to 7% chromium, about 2% to 6% molybdenum, about 0.1% to 1% nickel, about 0.3% to 0.7% carbon and the balance essentially iron. In the heat treated hardened condition, the matrix is characterized by the presence of martensite.

3,809,541
VANADIUM-CONTAINING TOOL STEEL ARTICLE
Gary Steven, 444 Royce Ave., Pittsburgh, Pa. 15216
Filed Oct. 24, 1972, Ser. No. 300,094
Int. Cl. C22c *39/14*
U.S. Cl. 29—192 2 Claims

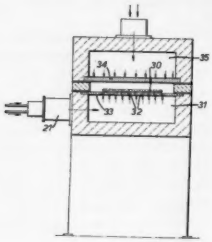


A vanadium-containing tool steel and article compacted from particles thereof and a method for producing said article from a prealloyed powdered charge of the alloy consisting essentially of, in weight percent, carbon 1.5 to 1.6, chromium 3.5 to 4.5, vanadium 2.5 to 3.5, tungsten 9 to 11, molybdenum 4.5 to 5.5, cobalt 8.0 to 12.5, manganese up to 1, silicon up to 1, nitrogen .02 to .08 and balance iron; the article is characterized by the combination of hardness and toughness making it desirable for cutting tool applications.

3,809,542
GLASS CERAMIC MATERIALS
Stanley Lythgoe, Parbold, and Philip Sidney Irlam, Southport, England, assignors to Pilkington Brothers Limited, Lancashire, England
Filed Feb. 15, 1972, Ser. No. 226,482
Claims priority, application Great Britain, Feb. 19, 1971, 5,019/71
The portion of the term of the patent subsequent to May 7, 1991, has been disclaimed
Int. Cl. C03b *18/00, 29/00*
U.S. Cl. 65—33 7 Claims

A method and apparatus for manufacturing glass ceramics from crystallizable vitreous material are disclosed, in which the temperature of the vitreous material is regulated to a value at which uniform dispersion of embryonic centers of incipient crystal growth is generated throughout

the material and the material is supported on a hot gaseous support, and thereafter the material is rapidly heated on its gaseous support to a crystallization range of temperature and held in that range on the gaseous support to transform the material to a glass ceramic by fine-grained crystal growth on those centers. The gaseous support may be provided by hot gas directed through perforated tiles on to the underside of the material. Hot gas may be directed on to both sides of the material to effect the rapid heating of maintenance in the crystallizations range, while the material is supported by the gas directed at it from one side. The thermal processing may be effected in a continuous manner in a furnace divided into a center-generating zone, a gradient zone, a crystallization zone and a cooling zone.



3,809,543

METHOD OF MAKING GLASS CERAMIC MATERIALS ON MOLTEN METAL SUPPORT

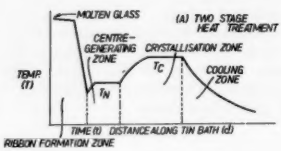
Philip Hedley Gaskell, Preston, Stanley Lythgoe, Parbold, Philip Sidney Irlam, Southport, Robert Percy Miller, Sunbury-on-Thames, and Thomas Ian Barry, Hampton Hill, England, assignors to Pilkington Brothers Limited, Liverpool, England

Filed Feb. 16, 1972, Ser. No. 226,857

Claims priority, application Great Britain, Feb. 19, 1971, 5,018/71

Int. Cl. C03b *18/00, 29/00*

U.S. Cl. 65—33 **12 Claims**



The invention relates to a method of manufacturing a fine-grained glass ceramic material from a thermally-crystallizable vitreous material, which may be an Li_2O—AL_2O_3—SiO_2 composition containing a nucleating agent such as P_2O_5, ZrO_2 or TiO_2, in which method the material is shaped and thereafter supported throughout the subsequent thermal processing, which is preferably effected on a non-wettable support such as a bath of molten metal, e.g. tin. The thermal processing essentially comprises subjecting the shaped material to a temperature/time regime which develops within the material a uniform dispersion of embryonic centers of incipient crystal growth, and then rapidly heating the material at a controlled rate to a predetermined crystallization temperature to effect fine-grained crystal growth on those centers while the viscosity of the glassy matrix of the crystallizing material is at a value which permits rapid stress relaxation.

3,809,544

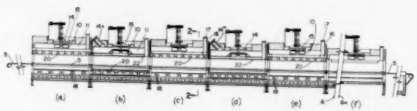
METHOD AND APPARATUS FOR HEATING, ANNEALING, TEMPERING, DECORATING AND HANDLING GLASSWARE

Edward W. Bowman, Uniontown, Pa., Murial B. Bowman and Michael Edward Bowman, executors of said Edward Woodrow Bowman, deceased, assignors to E. W. Bowman, Incorporated, Uniontown, Pa.

Continuation-in-part of applications Ser. No. 197,302, Nov. 10, 1971, now Patent No. 3,754,885, Ser. No. 201,890, Nov. 24, 1971, now Patent No. 3,741,744, and Ser. No. 238,919, Mar. 28, 1972. This application Feb. 23, 1973, Ser. No. 335,010

Int. Cl. C03b *25/04*

U.S. Cl. 65—119 **12 Claims**



Apparatus for treating and handling bottles, containers, tumblers and other blown and pressed glassware, to heat, anneal, temper, decorate and coat the same in an efficient manner, in minimum time, and with apparatus that occupies minimum space in glass manufacturing plants.

3,809,545

SUPERALLOYS BY POWDER METALLURGY

John Stanwood Benjamin, Suffern, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

Application Aug. 25, 1969, Ser. No. 852,861, now Patent No. 3,728,088, which is a continuation-in-part of application Ser. No. 709,700, Mar. 1, 1968, now Patent No. 3,591,362, dated July 6, 1971. Divided and this application Mar. 21, 1973, Ser. No. 343,471

Int. Cl. B22f *9/00*

U.S. Cl. 75—.5 R **3 Claims**

This invention relates to the powder metallurgy of superalloys and, in particular, to dispersion strengthened age hardenable superalloys and wrought products thereof. The invention also relates to a powder metallurgy method for producing wrought metal shapes of age hardenable superalloys, such as dispersion strengthened superalloys characterized metallographically by a uniform distribution of dispersoids in both the longitudinal and transverse directions.

3,809,546

METHOD OF MAKING A HARD ALLOY MATRIX CONTAINING A TUNGSTEN-BORON PHASE

Herbert F. Prasse, Town and Country, and Harold E. McCormick, Ballwin, Mo., assignors to Ramsey Corporation, St. Louis, Mo.

Original application Jan. 7, 1970, Ser. No. 1,187, now Patent No. 3,725,017. Divided and this application Aug. 15, 1972, Ser. No. 280,849

Int. Cl. C23c *7/00*

U.S. Cl. 75—.5 BC **12 Claims**

This invention relates to a method of making an novel alloy containing a tungsten-boron phase. The alloy comprises a matrix such as a nickel-chromium, or other nickel containing matrix, having therein a separate tungsten-boron phase. The alloy is used as a facing or coating

for a number of base materials, and in particular as a piston ring facing for the bearing portion thereof. The invention is particularly directed to a method of making said alloy by utilizing a plasma jet spray technique.

3,809,547

ELECTRIC FURNACE STEELMAKING PROCESS USING OXIDE OF BORON ADDITIVE

Clifford Jackson Lewis, Lakewood, Colo., and Richard Scott Bruski, Walnut Creek, Calif., assignors to The Flintkote Company, White Plains, N.Y.

No Drawing. Filed Dec. 22, 1970, Ser. No. 100,820

Int. Cl. C21c *5/52*

U.S. Cl. 75—11 **17 Claims**

The rate of dissolution of lime in the slag of a basic electric steelmaking furnace is accelerated by charging to the slag a boron-containing compound, particularly one that provides an oxide of boron, especially B_2O_3, under the operating conditions prevailing in the electric furnace. Illustrative of such additive compounds are boron trioxide, boric acid, anhydrous sodium tetraborate (borax), calcium metaborate, calcined and uncalcined colemanite and Rasorite. The additive preferably is delivered to the slag either in intimate mixture with the lime or separately but substantially simultaneously with the addition of the lime.

3,809,548

PROCESS FOR REFINING TECHNICAL GRADE SILICON AND FERROSILICON BY CONTINUOUS EXTRACTION

Helge Håkonsönn Aas, Svelgen, and Jörgen August Kolflaath, Blommenholm, Norway, assignors to Christiana Spigerverk, Oslo, Norway

No Drawing. Filed Apr. 26, 1971, Ser. No. 137,700

Claims priority, application Norway, May 4, 1970, 1,688/70

Int. Cl. C01b *33/02*; C22b *3/00*

U.S. Cl. 75—101 R **9 Claims**

A process for refining technical silicon and ferrosilicon having more than about 60% silicon, by leaching continuously in a hydrochloric acidic solution, preferably containing iron chloride, said process being characterized therein that the hydrochloric acidic solution is introduced into the bottom part of a reactor, said reactor being supplied from above with technical silicon or ferrosilicon in the form of lumps, whereby said lumps are leached and disintegrate, said disintegrated material passes upwards in the reactor during continued leaching, partly due to the sinking of lump size raw material and which displaces the disintegrated material, and partly due to the buoyancy caused by the acid flow and by produced or introduced gas, and that disintegrated and practically completely leached crude product together with the hydrochloric acidic solution flows out from the reactor through an overflow or is transported away from the upper part of the reactor by some other means.

3,809,549

ACID LEACHING OF LATERITIC ORE

Vaclav Opratko, 2501 Homelands Drive, Clarkson, Ontario, Canada; James Alexander Evert Bell, 45 Victoria St., Port Colborne, Ontario, Canada; and Roberto Vincenzo Ferrajuolo, 2235 Hurontario St., Cooksville, Ontario, Canada

No Drawing. Filed June 21, 1971, Ser. No. 155,326

Claims priority, application Canada, July 8, 1970, 87,699

Int. Cl. C22b *23/04*

U.S. Cl. 75—101 R **11 Claims**

Nickel values are acid leached from nickeliferous oxide ores by forming an aqueous slurry of ore and pyrites in an autoclave and oxidizing the pyrites at a temperature between about 200° C. and 260° C. to provide a sulfuric acid solution for selectively leaching the nickel values contained in the nickeliferous oxide ore without encountering undue scale formation on the autoclave walls and in auxiliary equipment. Advantageously, the slurry is heated to a temperature above about 250° C. after the leaching reaction is complete to facilitate subsequent liquid-solid separation. Dissolved nickel and cobalt values can be recovered by conventional techniques, such as hydrogen sulfide precipitation.

3,809,550

PROPERLY WELDABLE, CORROSION RESISTANT STRUCTURAL STEEL OF HIGH YIELD POINT

Henrik Giflo, Sandor Enekes, Pal Zambo, Janos Sziklavari, Istvan Farkas, Geza Ivan, Jozsef Molnar, and Jozsef Vamosi, Miskolc, Hungary, assignors to Lenin Kohaszati Muvek, Miskolc, Hungary

No Drawing. Filed Nov. 27, 1972, Ser. No. 309,910

Claims priority, application Hungary, Dec. 29, 1971, HE-166

Int. Cl. C22c *37/00, 39/02*

U.S. Cl. 75—124 **1 Claim**

This invention is for corrosion resistant structural steel which has high tensile strength, a high yield point and weldable under any conditions. The steel contains manganese, nickel and silicon in addition to the general contaminates and alloying elements and particularly carbon, copper, aluminum, nitrogen and niobium in amounts that impart the stated properties thereto.

3,809,551

ALUMINUM AND TIN BASE BEARING ALLOY

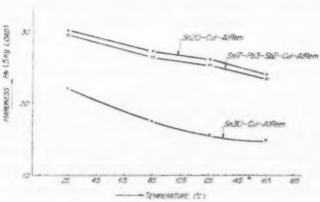
Nobukazu Morisaki, Nagoya, Japan, assignor to Daido Metal Company Ltd., Nagoya, Japan

Filed July 16, 1971, Ser. No. 163,249

Claims priority, application Japan, Nov. 28, 1970, 45/105,328

Int. Cl. C22c *21/00*

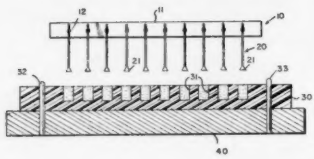
U.S. Cl. 75—140 **3 Claims**



Aluminum base bearing alloy of this type is suitable for use as internal combustion engine and is superior to conventional aluminum-tin alloys with respect to the surface characteristics such as embeddability and anti-seize characteristics.

This alloy contains 3 to 40 weight percent of tin, 0.1 to 5 weight percent of lead, 0.1 to 3 weight percent of antimony and 0.02 to 2 weight percent of copper, the balance being aluminum, this alloy can be further modified either by omitting copper, or by adding 0.02 to 5% of one or more of nickel, magnesium, iron, silcon and copper in lieu of copper additive or by further adding 0.01 to 1 weight percent of one or more of titanium, vanadium, cobalt and niobium.

3,809,552
METHOD FOR MAKING AN ANODE
Gerhart P. Klein, Manchester, Mass., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.
Filed Nov. 8, 1971, Ser. No. 196,328
Int. Cl. B22f 3/00
U.S. Cl. 75—208 R 6 Claims



The process for producing anodes on fixtures comprises the following steps. A stringer with risers of film forming metal welded at right angles to the stringer is lowered into row cavities in an elastomeric mold which have been filled with a film forming metal powder slurry. The risers are centered in the cavities. The powder slurry is frozen with the risers held in registration with the mold pattern. After solidification of the slurry the stringer is withdrawn and the frozen anodes are pulled out of the mold cavities. Predrying preferably with the risers in place prior to freezing removes excess water so that the anodes after thawing will retain their shape and have sufficient strength to withstand the limited handling necessary to transfer them to the sintering equipment. Sintering is preferably done in a horizontal furnace, and preferably special fixtures or a belt to hold the stringer in either horizontal or vertical position so that none of the anodes come in contact with any of the parts of the system while the stringers are carried through the furnace for sintering. The stringers are then removed from the belt for further processing.

3,809,553
METAL FOIL-MAKING PROCESS
Robert L. Peaslee, 217 Linden, Royal Oak, Mich. 48073
No Drawing. Filed Dec. 26, 1972, Ser. No. 318,096
Int. Cl. B22f 3/14, 3/18, 3/22
U.S. Cl. 75—213 10 Claims

A process for making metallic foil consisting of a substantially hard and nondeformable metal or metal alloy which comprises reducing the metal or metal alloy to a powder and thereafter bonding the powder by means of a volatile organic binder into a thin sheet which thereafter is sintered in vacuum at an elevated temperature while disposed between two substantially flat refractory surfaces, forming thereby an integral metallic foil which is substantially devoid of any residual binder constituent.

3,809,554
DRY ELECTROSTATIC TONER COMPOSITION AND PROCESS OF DEVELOPING
Stewart H. Merrill and James R. Olson, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Aug. 2, 1971, Ser. No. 168,389
Int. Cl. G03g 9/07, 13/08
U.S. Cl. 96—1 SD 12 Claims

Uniformly charging electroscopic toner compositions for use in developing electrostatic charge patterns are described. Dry developer compositions containing a carrier and said uniformly charging toner are also described. The toner compositions contain aromatic resins characterized by a recurring unit containing alternating methylene groups and certain aromatic groups.

3,809,555
METHOD FOR ELECTROPHOTOGRAPHIC EXPOSURE
Brian George Marley, Belair, South Australia, Australia, assignor to Research Laboratories of Australia, Pty. Limited, Eastwood, South Australia, Australia
Filed Dec. 20, 1972, Ser. No. 316,755
Claims priority, application Australia, Dec. 24, 1971, 7,517/71
Int. Cl. G03f 5/00; G03g
U.S. Cl. 96—1 R 4 Claims

A method for electrophotographic exposure in which a charged photoconductive recording member is exposed twice before development, once using in combination a continuous tone transparency and a screened transparency as an exposure mask, and then using the continuous tone transparency only as the exposure mask.

3,809,556
METHOD OF APERTURE CONTROLLED ELECTROSTATIC IMAGE REPRODUCTION OR CONSTITUTION
Gerald L. Pressman, San Jose, and Thomas D. Kittredge, South San Francisco, Calif., assignors to Electroprint, Inc., Palo Alto, Calif.
Original application Nov. 15, 1968, Ser. No. 776,146, now Patent No. 3,647,291, dated Mar. 7, 1972. Divided and this application July 28, 1971, Ser. No. 167,005
Int. Cl. G03g 13/22
U.S. Cl. 96—1 R 9 Claims

The invention basically comprises apparatus and methods relating to the field of electrostatics, and is concerned with electrostatic reproducing or constituting. Apertured screen means carry charge distributions in accordance with a pattern such that particles directed at the screen means pass therethrough under modulation control dictated by the pattern.

The invention further relates to apparatus and methods for constituting or reproducing images through the use of a multi-layered screen consisting of an array of apertures. A propulsion field directs charged particles through the screen to a receiving medium preferably spaced at a distance from the screen. Charge distribution on the screen controls the flow of particles through the apertures, some of which are in effect blocked, partially blocked, unblocked, and enhanced, depending on the local charge level. Thus, it is possible to produce patterns of varying tone without contact with the printed or effected substrate.

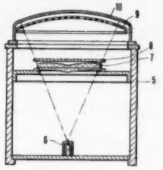
3,809,557
METHOD FOR APERTURE CONTROLLED ELECTROSTATIC IMAGE COLOR REPRODUCTION OR CONSTITUTION
Gerald L. Pressman, San Jose, and Thomas D. Kittredge, South San Francisco, Calif., assignors to Electroprint, Inc., Palo Alto, Calif.
Original application Feb. 18, 1969, Ser. No. 800,236, now Patent No. 3,697,164. Divided and this application July 28, 1971, Ser. No. 167,040
Int. Cl. G03g 13/22
U.S. Cl. 96—1.2 3 Claims

The invention basically comprises methods relating to the field of electrostatics, and is concerned with electrostatic reproducing or constituting in color. Apertured screen means carry charge distributions in accordance with selected color patterns, such that particles directed at the screen means pass therethrough under modulation control dictated by the pattern. The patterns may be determined by the primary or other selected colors applied in sequence, or applied simultaneously.

A multi-layered screen comprising preferably at least an insulative and a conductive layer is characterized by an array of electrostatically sensitive apertures. A propulsion field directs charged particles through the screen to a receiving medium, preferably spaced at a distance from the

screen. Charge distribution on the screen controls the flow of particles through the apertures, some of the apertures being in effect blocked, partially blocked, unblocked, and enhanced, depending on the local charge level. This is true for each color or filter employed to produce the patterns of varying tone for sequential use in reconstituting the image in color, with or without contact with the substrate.

3,809,558
EXPOSURE DEVICES UTILIZED TO MANUFACTURE COLOR PICTURE TUBES
Eiichi Yamazaki, Ichihara, and Koichi Maruyama, Tushio Ueda, and Tomizo Nakamura, Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 2, 1972, Ser. No. 231,219
Claims priority, application Japan, Mar. 5, 1971, 46/11,276
Int. Cl. G03b *27/16*
U.S. Cl. 96—45.1 **4 Claims**



In an exposure device utilized to manufacture a color picture tube of the class comprising a source of light and a correction lens having a discontinuous surface consisting of a plurality of divided regions and portions interconnecting adjacent divided regions, wherein the divided regions and the portions therebetween have different light transmission characteristics and the light emanated from the source of light and transmitting through the correction lens is used to illuminate the phosphor photo-resist coated on the inner surface of the panel of the tube, there is provided a filter integral with or independent of the correction lens. The filter is constructed to have opposite distribution pattern of the light transmission characteristics to that of the correction lens thereby providing a uniform distribution of the light passing through the filter and the correction lens and illuminating the phosphor.

3,809,559
LIQUID AMINE-TYPE DEVELOPER FOR DIAZOTYPE MATERIALS
Henry J. Neuman, Chicago, Ill., assignor to Addressograph-Multigraph Corporation, Mount Prospect, Ill.
No Drawing. Continuation of abandoned application Ser. No. 128,541, Mar. 26, 1971. This application June 8, 1973, Ser. No. 368,169
Int. Cl. G03c *5/34*
U.S. Cl. 96—49 **10 Claims**

A developer liquid containing as the active ingredients at least 20% by weight of morpholine, piperidine, lower alkyl morpholine, lower alkyl piperidine, or an organic amine of the formula:

$$RR'N—C_nH_{2n}—O—X$$

wherein R, R′ and X are hydrogen, lower alkyl or lower hydroxy alkyl and n is an integer from 2 to 4, inclusive, and containing a diluent which may be a polyhydric alcohol, a glycol ether or a monofunctional alcohol and a third component which is a carboxylic fatty acid having a carbon chain length of from 16 to 18 carbon atoms such as oleic, linoleic, linolenic, stearic or palmitic and is present in an amount ranging from 1% to 20% by weight.

3,809,560
AMINE-TYPE DEVELOPER FOR DIAZOTYPE MATERIALS
Henry J. Neuman, 5730 Sheridan Road, Chicago, Ill. 60660
No Drawing. Original application Mar. 26, 1971, Ser. No. 128,541, now abandoned. Divided and this application June 8, 1973, Ser. No. 368,573
Int. Cl. G03c *5/34*
U.S. Cl. 96—49 **6 Claims**

A developer liquid containing as the active ingredients at least 20% by weight of morpholine, piperidine, lower alkyl morpholine, lower alkyl piperidine, or an organic amine of the formula:

$$RR'N—C_nH_{2n}—O—X$$

wherein R, R′ and X are hydrogen, lower alkyl or lower hydroxy alkyl and n is an integer from 2 to 4, inclusive, and containing a diluent which may be a polyhydric alcohol, a glycol ether or a monofunctional alcohol and a third component which is a carboxylic fatty acid having a carbon chain length of from 16 to 18 carbon atoms such as oleic, linoleic, linolenic, stearic or palmitic and is present in an amount ranging from 1% to 20% by weight.

3,809,561
NEGATIVE UNFOGGED SILVER HALIDE EMULSION CONTAINING A SENSITIZING COMBINATION OF A CYANINE DESENSITIZING DYE AND A SUPERSENSITIZING COMPOUND
Cynthia G. Ulbing, Rochester, and Daniel A. Corretore, Jr., Webster, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed June 1, 1972, Ser. No. 258,770
Int. Cl. G03c *1/28, 1/36, 1/84*
U.S. Cl. 96—84 **15 Claims**

Negative unfogged photographic silver halide emulsions containing a desensitizing carbocyanine dye and a supersensitizing agent are provided. The supersensitizing agent substantially eliminates the desensitizing effect of the desensitizing dyes and renders them useful as sensitizers for negative silver halide emulsions. Also disclosed is the use of desensitizing dyes as filtered dyes in a photographic element in combination with a supersensitizing agent, desensitization by migrated dye molecules being thereby greatly reduced.

3,809,562
METAL PHOTOGRAPHIC PLATE COMPRISING A PHOTOCONDUCTOR AND PROCESS
Robert F. Gracia, Scituate, Richard A. Laughrey, Woburn, and Paul F. Tuohey, Quincy, Mass., assignors to Itek Corporation, Lexington, Mass.
No Drawing. Continuation-in-part of abandoned application Ser. No. 744,631, July 15, 1968. This application July 13, 1970, Ser. No. 54,626
Claims priority, application Great Britain, July 14, 1969, 35,290/69
Int. Cl. G03f *7/02*
U.S. Cl. 96—33 **17 Claims**

A metallic base photographic plate having images adherently and preferably conductively bonded to the metallic support is produced by exposing a copy medium comprising a particulate photoconductor on a superficially roughened metallic support wherein the photoconductor is substantially photoconductively insulated from the metallic support, and contacting this copy medium with chemically reactive image-forming materials, such as a physical developer. A preferred process is one utilizing a copy medium capable of being rapidly processed and having a layer of a photoconductor-binder emulsion on a

roughened metallic support and a physical developer capable of producing an image adherently and conductively bonded to the metallic support. The plate produced by this invention is useful as a printing plate, name plate, printed circuit and the like.

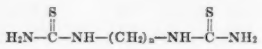
3,809,563

METHOD FOR PROCESSING LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS

Takao Nimura and Kunio Jin, Tokyo, and Hajime Komatsu, Odawara, Japan, assignors to Konishiroku Photo Industry Co., Ltd.

No Drawing. Filed Mar. 7, 1972, Ser. No. 232,624
Claims priority, application Japan, Sept. 16, 1970, 45/80,512
Int. Cl. G03c *7/16, 5/32*
U.S. Cl. 96—22 **6 Claims**

In the processing of an exposed silver halide color photographic material with a bleach-fixing solution containing a ferric salt of ethylene diamine tetraacetic acid, quick bleach-fixing can be effected by incorporating the below-mentioned compound in a bath which is employed prior to said bleach-fixing solution of a bleach-fixing bath.



Wherein n is 0 or a positive integer of 1 to 5.

ERRATUM

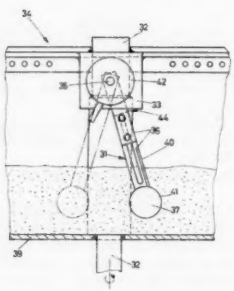
For Class 96—100 see:
Patent No. 3,808,945

3,809,564

METHOD TO CONTROL THE MOISTURE CONTENT OF GRANULAR SUBSTANCES

Horst Feddern, Schaffhausen, Switzerland, assignor to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

Filed Dec. 14, 1971, Ser. No. 207,775
Claims priority, application Switzerland, Dec. 16, 1970, 18,683/70
Int. Cl. B28b *7/34*
U.S. Cl. 106—38.9 **5 Claims**



A feeler is introduced into the granular substance which is relatively moved with respect to the feeler with a predetermined force. The feeler can move over a deflection path against a restraining force, for example, a spring, and the extent of deflection of the feeler from a rest position is measured, this extent being a measure of the stickiness, or moisture content of the granular substance. Addition of moisture is controlled by the extent of this deflection.

3,809,565

METHOD OF FORMING MICRON-SIZE, METAL-CARBIDE PARTICLE DISPERSIONS IN CARBON

Eugene M. Wewerka, Richard J. Imprescia, and Robert D. Reiswig, Los Alamos, N. Mex., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Apr. 23, 1973, Ser. No. 353,276
Int. Cl. C04b *35/52, 35/56*
U.S. Cl. 106—56 **8 Claims**

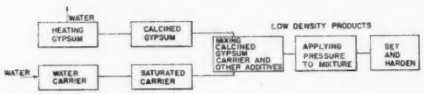
Dispersions of micro-size, metal-carbide particles are achieved in carbon matrices by dissolving or dispersing organometallic compounds in carbon precursor materials, e.g., thermosetting resins and coal tar pitch, and subjecting the mixture to a high temperature heat treatment.

3,809,566

GYPSUM-BASED BUILDING PRODUCT AND METHOD OF PRODUCING SAME

Orville J. Revord, Rte. 1, Tawas City, Mich. 48763

Filed May 26, 1972, Ser. No. 257,133
Int. Cl. C04b *11/00*
U.S. Cl. 106—110 **3 Claims**



A method and an apparatus for producing a high density building product with calcined gypsum and a minimum amount of water comprising the step of diffusing the water, under pressure, throughout the calcined gypsum to substantially recrystallize the calcined gypsum.

3,809,567

POLYCHLOROPRENE RUBBERS

George Alexander Rohan, Esher, England, assignor to Kappa Holding A.G., Zug, Switzerland

Filed Jan. 10, 1972, Ser. No. 216,441
Claims priority, application Great Britain, Jan. 12, 1971, 1,521/71
Int. Cl. C09c *1/02*
U.S. Cl. 106—306 **4 Claims**

An additive for incorporation in polychloroprene rubber which comprises a physical mixture of magnesium oxide and an inert diluent powder which is compatible with polychloroprene rubber, the mixture containing 10 to 850 parts by weight of diluent powder per 100 parts by weight of magnesium oxide.

3,809,568

DECORATIVE PLASTIC FINISH

John Thomas Askew, Fountain Valley, Calif., assignor to Flashbacks, Fountain Valley, Calif.

No Drawing. Filed Jan. 19, 1972, Ser. No. 218,953
Int. Cl. B41m *1/28, 1/30*
U.S. Cl. 117—38 **10 Claims**

A decorative plastic finish process and product particularly for use on plastic film and sheeting, especially polystyrene and polybutyrate sheeting. Plastic sheet or shaped articles are first metallized e.g. by vacuum deposition to deposit a thin, adherent layer of metal, for example aluminum, on the plastic surface. The metallized plastic

is then printed in whole or in part, depending on the desired configuration with a transparent ink by means of a silk screen. After passing briefly through a forced air drying oven, the printed surface can be overprinted with additional layers of transparent ink, if desired, by the same method. Each printing of transparent ink is thoroughly dried before each overprinting. By a preferred embodiment, a final coat of clear lacquer is applied and oven dried.

The decorative plastic product is characterized by a plastic substrate, a first thin layer of metal, at least one overlayer of transparent ink covering at least a part of the first metallized layer, and, preferably, a final finish coat of clear lacquer to protect and seal the surface. The resulting surface is highly brilliant and lustrous due to the reflective quality of the metallizing layer penetrating and shining through the applied transparent inks and clear lacquer coat.

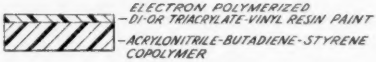
3,809,569
METHOD OF PAINTING POLYOLEFIN SUBSTRATE

Elihu J. Aronoff, 52 Lanewood Ave., Framingham, Mass. 01701, and Ernest O. McLaughlin, 165 Arcola, Garden City, Mich. 48135

Continuation of abandoned application Ser. No. 847,230, Aug. 4, 1969. This application Oct. 4, 1971, Ser. No. 186,545

Int. Cl. B44d *1/50*; **C08f** *3/64*

U.S. Cl. 117—93.31 **6 Claims**



An improved method for coating a solid substrate of polyolefin with an adherent coating of a copolymer of acrylic monomers crosslinked wtih vinyl monomers which comprises applying to the polyolefin substrate a film-forming solution which, on a pigment and particulate filler-free basis consists essentially of (A) about 15 to about 45 weight percent acrylate selected from the group consisting of diacrylates and dimethacrylates of a C_2–C_{12} alkane diol, diacrylates and dimethacrylates of a C_4–C_{12} polyether diol, and triacrylates and trimethacrylates of a C_6–C_{12} triol, and (B) 55 to 85 weight percent of a vinyl resin-comprising component consisting of 0 to about 85 weight percent monovinyl monomers and about 15 to 100 weight percent of an alpha-beta olefinically unsaturated copolymer of acrylic monomers containing between about 0.5 and about 5 units of alpha-beta olefinic unsaturation per 1,000 units molecular weight and crosslinking the liquid coating on the polyolefin substrate by exposing the coating to a beam of polymerization effecting electrons having average energy in the range of about 100,000 to about 500,000 electron volts.

3,809,570
GALVANIZING TECHNIQUE FOR WIRE AND THE LIKE

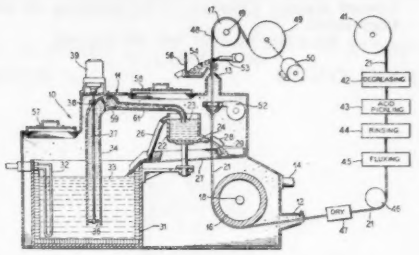
Joseph L. Herman, Pompano Beach, Fla., assignor to Emily Herman Thompson

Filed May 17, 1973, Ser. No. 360,556

Int. Cl. C23c *1/00*

U.S. Cl. 117—102 M **17 Claims**

A method and apparatus for evenly and uniformly galvanizing wire, strip steel and the like. A descaled, dry wire or the like is passed vertically and upwardly through a transversely flowing stream of molten zinc without touching anything solid while the zinc and the wire are



in an oxygen free atmosphere. The so coated wire is preferably quenched in a flowing water bath.

3,809,571
PROCESS FOR MAKING SILICON METAL

Norman R. Berlat, Vienna, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Apr. 4, 1972, Ser. No. 241,085

Int. Cl. C23c *11/06*

U.S. Cl. 117—106 A **5 Claims**

There is described an improvement in making polycrystalline silicon metal, as used for the making of semiconductors, from trichlorosilane which involves providing greater amounts of trichlorosilane in a metal forming reactor then heretofore has been employed. This provides greater Si metal productivity than was heretofore believed possible.

3,809,572
PROTECTING FERROUS BASE METAL ARTICLES AGAINST CORROSION BY TREATMENT WITH NIOBIUM OXIDE

Jerome J. Kanter, 12300 Hobart Ave., Palos Park, Ill. 60464

No Drawing. Continuation-in-part of abandoned application Ser. No. 882,267, Dec. 4, 1969. This application Feb. 7, 1972, Ser. No. 224,229

Int. Cl. C23f *11/06*

U.S. Cl. 117—127 **4 Claims**

Corrosion of iron, steel and other ferrous base metal articles is reduced by a process in which such articles are treated with niobium oxide admixed with a water medium having a basic pH.

3,809,573
METHOD FOR FINISHING WOVEN AND NON-WOVEN FABRICS FORMED OF POLYESTER MATERIALS

Robert D. Feitlowitz, Ridgewood, N.J., assignor to DHJ Industries, Inc., New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 24,372, Mar. 31, 1970. This application Jan. 31, 1972, Ser. No. 222,313

Int. Cl. B44d *5/00*

U.S. Cl. 117—138.8 F **2 Claims**

A method of finishing woven and non-woven fabrics formed of 100% polyester material to impart an increased level of stiffness which is durable to laundering and dry cleaning consisting of the steps of (a) preparing a mixture of (A) a combination of poly(butyl acrylate), polystyrene and polyacrylic acid, (B) a melamine selected from the group consisting of hexakis hydroxymethyl melamine and alkylated methylolated melamine (C) a strong acid, (D) an emulsion of a glycol phthalate polyester resin, and water (b) impregnating the 100% polyester material with said mixture, (c) drying, (d) thermally curing, (e) heat setting and (f) modifying the resultant fabric stiffness utilization of a button breaking operation.

3,809,574

ALUMINUM OXIDE FILMS FOR ELECTRONIC DEVICES

Michael Thomas Duffy, Princeton Junction, and James Edward Carnes, Cranbury, N.J., assignors to RCA Corporation

Filed July 15, 1971, Ser. No. 162,888
Int. Cl. B44d 1/18
U.S. Cl. 117—201 13 Claims

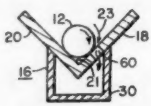
An improved metal-alumina-semiconductor (MAS) device includes an aluminum oxide film formed by chemical vapor phase deposition in the presence of a hydrogen halide. This film, used as a passivating layer or as a gate insulator of an IGFET, exhibits high initial dielectric breakdown strength and other properties which add stability and longer life over conventional devices.

3,809,575

METHOD AND APPARATUS FOR REMOVAL OF SURFACE MOISTURE FROM PELLETS

Denis Yeo, Columbia, S.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 1, 1972, Ser. No. 230,899
Int. Cl. B08b 5/04
U.S. Cl. 134—21 9 Claims



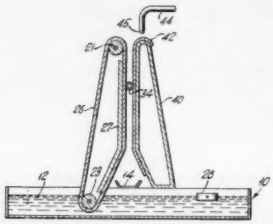
Apparatus for rapidly, efficiently and effectively removing surface fluids from a wetted cylindrical body and in particular nuclear fuel pellets, comprising an elongated trough member in which the cylindrical body moves on its side along the trough with its cylindrical sides in contact with the sides of the trough and in such movement passes adjacent to one or more apertures or slots through which air is drawn at a high velocity so that the fluid along with any dust or particles on the surface of the body is picked up and carried away through the aperture to an evacuating apparatus. The cylindrical body is rotated as it passes adjacent the aperture so that all surfaces of the body are exposed to the high velocity air stream being drawn in through the apertures whereby substantially all the water and surface dusts and loose particles are removed. A process for removing excess surface fluids from a wetted cylinder is also set forth.

3,809,576

METHOD AND APPARATUS FOR MOISTURIZING SHIRRED CASING STICKS

Walter V. Marbach, Palos Heights, Frank J. Acton, Glen Ellyn, Harry P. Eichin, Western Springs, and Louis L. Winokur, Evanston, Ill., assignors to Union Carbide Corporation

Continuation of abandoned application Ser. No. 637,538, Mar. 10, 1967. This application Oct. 22, 1970, Ser. No. 83,219
Int. Cl. A22c 13/00
U.S. Cl. 134—42 6 Claims



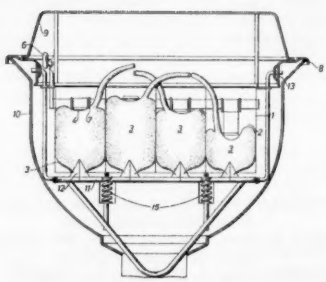
Shirred casing sticks are moisturized after being shirred but prior to being packaged into cartons for subsequent shipment. Apparatus and method are provided for moisturizing shirred casing sticks which comprises, in combination, at least one deformable member capable of absorbing and retaining water and releasing water upon being deformed; means for wetting said deformable member with water; means for maintaining said deformable member wetted with water such that at least a portion of the circumferential surface of a shirred casing stick extending along its longitudinal axis can be placed in frictional engagement with said deformable member and moisturized thereby; and means for removing a moisturized shirred casing stick from the apparatus.

3,809,577

METHOD OF EMPTYING DRAINAGE BAGS AND APPARATUS FOR CARRYING OUT THE METHOD

Lars-Ake Olof Thorsson, Motala, and Erik Borje Jarvenson, Jakobsberg, Sweden, assignors to AB Motala Verkstad, Motala, and Landstingens Inkopscentral, Solna, Sweden

Filed Mar. 6, 1972, Ser. No. 231,999
Claims priority, application Sweden, Mar. 10, 1971, 3,101/71; Aug. 27, 1971, 10,907/71
Int. Cl. B08b 7/04; B67b 7/24
U.S. Cl. 134—42 4 Claims



Drainage bags containing body fluids are collected and each placed in a compartment in a bag collecting basket.

The basket is then placed in a treatment chamber. The bags have their bottom portions punctured as a result of closing the cover of the chamber either by knives in the chamber or clippers carried by the basket so that drainage of the bags and discharge of the fluids from the chamber occurs. Closure of the cover also initiates a rinsing and disinfecting cycle so that clean and disinfected bags can be removed from the chamber.

3,809,578

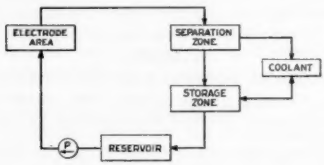
PROCESS FOR FORMING AND STORING HALOGEN HYDRATE IN A BATTERY

Philip C. Symons, Birmingham, Mich., assignor to Occidental Energy Development Company, Madison Heights, Mich.

Original application June 26, 1970, Ser. No. 50,054, now Patent No. 3,713,888. Divided and this application Aug. 31, 1972, Ser. No. 282,736

Int. Cl. H01m *35/00*

U.S. Cl. 136—6 E **26 Claims**



A process for the useful storage of electrical energy employing halogen hydrates is described. The halogen hydrate can be generated during the charging of a secondary battery or may be chemically generated and placed in a primary battery.

3,809,579

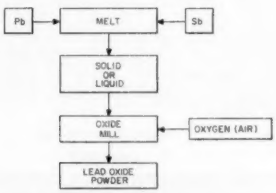
METHOD FOR PRODUCING LEAD OXIDE CONTAINING ANTIMONY, LEAD OXIDE MADE BY THE METHOD, AND A STORAGE BATTERY ELECTRODE USING THE OXIDE

C. Joseph Venuto, Philadelphia, Pa., assignor to ESB Incorporated

Original application Oct. 27, 1971, Ser. No. 192,947, now Patent No. 3,723,182. Divided and this application Nov. 16, 1972, Ser. No. 306,981

Int. Cl. H01m *35/02*

U.S. Cl. 136—26 **4 Claims**



A storage battery positive electrode is disclosed having a grid structure without antimony and a paste containing a small controlled quantity of antimony therein. Methods of preparation of the antimony containing oxide by the use of conventional lead oxide producing equipment is also described.

3,809,580

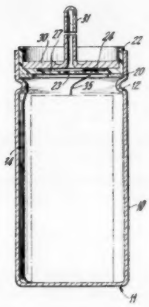
BATTERY SEALING AND COMPONENT CONNECTING METHOD

Bruce E. Jagid, Whitestone, N.Y., assignor to Power Conversion, Inc., Tuckahoe, N.Y.

Filed June 1, 1971, Ser. No. 148,458

Int. Cl. H01m *1/02*

U.S. Cl. 136—133 **7 Claims**



A non-aqueous hermetically sealed battery cell comprising an electrode assembly and an anhydrous liquid electrolyte is formed by necking a metal casing, closed at one end, a predetermined distance from the other end and seating upon said neck an assembly including a thrust ring, an insulating member, and a metal cap. The open end is then uniformly upset or crimped to bear upon said insulating member and cap, thereby hermetically sealing the assembly. A feature of the invention calls for the passing of an electrode-coupled conductor between the thrust ring and neck prior to upset to thereby form a mechanically and electrically secure electrode contact. The battery is filled with electrolyte through a nipple in the cap which is then cold welded.

3,809,581

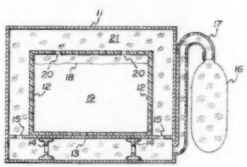
LONG-TERM DEEP SUBMERGENCE BATTERY POWER SUPPLY

Williston E. Hutchison, 7945 Michelle Drive, La Mesa, Calif. 92037

Filed Sept. 3, 1971, Ser. No. 177,745

Int. Cl. H01m *11/00*

U.S. Cl. 136—161 **1 Claim**



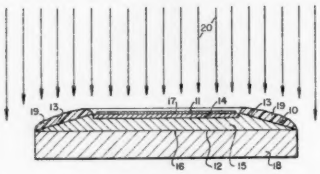
A long-term deep submergence battery power supply utilizing nickel cadmium batteries submerged in a combination of electrolyte and dielectric oil with provision for a pressure equalization.

3,809,582

IRRADIATION FOR FAST RECOVERY OF HIGH POWER JUNCTION DIODES

Krishan S. Tarneja, Pittsburgh, and Frank V. Marcinko, Uniontown, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 8, 1973, Ser. No. 339,242
Int. Cl. H01l 7/00
U.S. Cl. 148—1.5 3 Claims



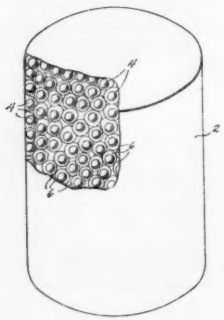
The recovery time of a high power junction diode is substantially reduced and tailored to sepecific specifications while maintaining within nominal ranges other electrical characteristics and particularly the forward voltage drop of the device. The diode is irradiated preferably with electron radiation which preferably has an intensity between about 1 and 3 mev. Further preferred, the electron radiation is applied to a dosage level between about 1×10^{12} and 1×10^{14} electrons per cm.^{2}.

3,809,583

SOLID AGENT FOR BORIDING METALS

Harald Krzyminski, Konigstein, Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Filed May 15, 1972, Ser. No. 253,515
Claims priority, application Germany, June 1, 1971, P 21 27 096.2
Int. Cl. C23c 9/00
U.S. Cl. 148—6.35 12 Claims



A solid agent for the boriding of metals, especially steel and iron is made by intimately mixing boron yielding compounds and activators and jointly pressing to a granulate.

3,809,584

METHOD FOR CONTINUOUSLY GROWING EPITAXIAL LAYERS OF SEMICONDUCTORS FROM LIQUID PHASE

Shin-ichi Akai, Hideki Mori, Nobuo Takahashi, and Shin-ichi Iguchi, Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jan. 18, 1973, Ser. No. 324,887
Claims priority, application Japan, Jan. 28, 1972, 47/10,644
Int. Cl. H01l 7/38
U.S. Cl. 148—172 8 Claims

Single-crystal epitaxial layers of semiconductors are grown on suitable substrates from the liquid phase.

The substrates are moved consecutively on a plurality of vessels in a reaction furnace from a high temperature region to a low temperature region maintained within the reaction furnace, which is provided with a temperature gradient in the longitudinal direction, all the while the substrates are kept in contact with the liquid solution containing a source material of the epitaxial layers, whereby the epitaxial layers are grown successively and on a continuous basis.

3,809,585

URETHANE PROPELLANT COMPOSITION

Harold L. Greenberg, West Covina, Calif., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Nov. 9, 1966, Ser. No. 594,314
Int. Cl. C06d 5/06
U.S. Cl. 149—19.4 3 Claims

A propellant which comprises an inorganic oxidizer such as ammonium perchlorate, a metal fuel such as aluminum, and an improved urethane binder formed by the condensation of polytetramethylene ether glycol with organic diisocyanates or nitrodiisocyanates, crosslinked with polyfunctional hydroxyl compounds and plasticized with phosphate esters, adipate, azelate, and sebacate esters and/or nitroplasticizers.

3,809,586

INCENDIARY COMPOSITION INCLUDING ZINC-MISCHMETAL ALLOY

Hal R. Waite, Rte. 1, Box 52–E, Eldredge Road, Fort Walton Beach, Fla. 32548

No Drawing. Continuation-in-part of abandoned application Ser. No. 840,211, July 9, 1969. This application Aug. 18, 1972, Ser. No. 281,633
Int. Cl. C06d 1/02
U.S. Cl. 149—19.91 9 Claims

Incendiary compositions characterized by long-burning qualities and retentive incandescent ash comprise finely divided heavy metal as fuel and oxygen-containing polymer as binder and oxidizer, e.g., mixed rare earth metal of the lanthanide series and acrylic-type polymer. The compositions find particular utility in making incendiary bombs that have identical ballistics with explosive fragmentary bombs.

3,809,587

MERCURY CONTAINING ALUMINUM HYDRIDE COMPOSITION AND PROCESS OF MAKING

Alfred D. Cianciolo and Donald J. Sabatine, Hamden, and Samuel I. Trotz, New Haven, Conn., assignors to Olin Corporation

Filed Apr. 30, 1963, Ser. No. 278,514
Int. Cl. C06b 15/00
U.S. Cl. 149—109 8 Claims

1. A mercury-containing aluminum hydride composition comprising aluminum hydride and from about 0.0005

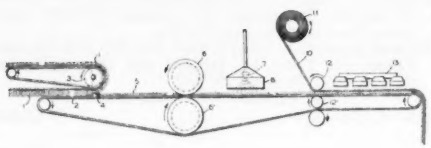
to about 2.5 percent by weight based on the aluminum hydride of mercury.

7. The process for the preparation of a mercury-containing aluminum hydride composition which comprises contacting aluminum hydride with mercury under reduced pressure in a closed system for a period of from about 0.5 to about 35.0 hours at a temperature of from about 40° C. to about 150° C. and recovering the resulting mercury-containing aluminum hydride composition, the quantity of mercury employed being from about 0.001 to about 50 moles per mole of aluminum hydride.

3,809,588
PEROXY CONTAINING COMPOSITIONS
Rudolf J. Zeblisky, 41 Glenwood Drive, Hauppauge, N.Y. 11787
No Drawing. Continuation-in-part of abandoned application Ser. No. 873,636, Nov. 3, 1969. This application Oct. 8, 1971, Ser. No. 187,916
Int. Cl. C23f *1/00*
U.S. Cl. 156—18 **35 Claims**

Etching solutions containing a peroxy-containing compound, a complexing agent for copper and an etchant stabilizing agent useful in the etching of copper.

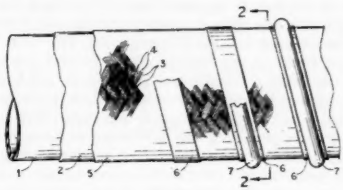
3,809,589
METHOD FOR MAKING PILE FABRIC
Virginia Ann Kerstetter, Chelmsford, and Louis Richard Mizell, Andover, Mass., assignors to I.W.S. Nominee Company Limited, London, England
Continuation of abandoned application Ser. No. 961, Jan. 6, 1970. This application Dec. 8, 1971, Ser. No. 206,150
Int. Cl. B32b *5/08*
U.S. Cl. 156—68 **6 Claims**



Flexible pile fabrics are made by bending the end portions of the fibres in a surface of an array of aligned fibres, setting the fibres in the bent state, and securing the bent fibre ends in a layer of adhesive. Suitably aligned fibres arrays may be made by severing the projecting fires of a furred animal skin, such as raw or pickled wooled skins, or of an artificial fabric having projecting fibres of natural or synthetic origin. A fabric backing material may be adhered to the face of the pile fabric carrying the adhesive layer before or after the setting of the adhesive.

3,809,590
JET ENGINE STARTER HOSE AND METHOD OF MAKING IT
Ralph S. Fantini, Philadelphia, and Robert W. Davison, Pittsburgh, Pa., assignors to H. K. Porter Company, Inc., Pittsburgh, Pa.
Filed Feb. 14, 1972, Ser. No. 226,003
Int. Cl. B32b *1/08*
U.S. Cl. 156—149 **1 Claim**

The invention is directed to the provision of a heat and abrasion resistant fiexible hose especially adapted for use as jet engine starter hose and consists of polyester-fiber-yarn-reinforced hose having high heat resistance surrounded by a spirally or helically disposed buffer strip having high abrasion resistance at elevated temperatures such as those attained by jet engine starter hoses as well

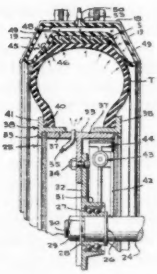


as good abrasion resistance at ordinary temperatures, the invention comprehending also a novel method of making the hose.

3,809,591
POLYAMIDE-METAL STRUCTURE
Elliot A. Vogelfanger, Edison, and Bennett Nathanson, West Orange, N.J., assignors to Celanese Corporation, New York, N.Y.
No Drawing. Filed Dec. 27, 1971, Ser. No. 212,772
Int. Cl. B32b *15/08, 27/34, 31/22*
U.S. Cl. 156—151 **14 Claims**

A structure comprising a metal substrate laminated to an aromatic polyamide film layer with no adhesive disposed therebetween. The structure is characterized by its ability to withstand temperatures in the range of 500° F. to 550° F. for up to one minute. In addition, processes are disclosed for forming the structure without requiring the use of an adhesive to bond the metal substrate to the polyamide film.

3,809,592
PROCESS AND APPARATUS FOR RETREADING TIRES
Clement O. Dennis and William Franklin Everhardt, Macon, Ga., assignors to Denbilt Corporation, Macon, Ga.
Filed Apr. 4, 1972, Ser. No. 240,948
Int. Cl. B29h *5/04*
U.S. Cl. 156—394 **13 Claims**



A process and apparatus for retreading tires wherein a tire casing with an applied tread rubber strip is mounted

on a rim and encircled with a hollow, inflatable, flexible matrix or curing bag within a rigid housing shell, and heated fluid under pressure is run simultaneously through the interior of the tire casing and through the hollow, flexible matrix bag to apply curing heat and pressure to both the exposed surfaces of the tread strip and the interior of the tire on opposite sides of the bond interface. The apparatus embodies a rotatable rim to mount the tire, with brake means to hold it immovable. The shell which houses or backs-up the flexible matrix or curing bag is of hinged, sectional construction, and means are provided for raising and lowering the open shell to facilitate loading tires on the rim. The generally self-supporting annular flexible matrix or curing bag is molded or formed with a generally hollow, channel-like cross-sectional shape providing a generally flat central inner wall section relatively closely approximating the width of the tread strip cross-section for contact with the tread surface of the strip, and further providing integrally molded annular transversely extending side and adjacent side wall portions of the tire casing.

3,809,593

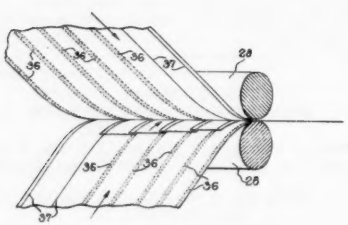
METHOD AND APPARATUS FOR THE CONTINUOUS MANUFACTURE OF COLLAPSIBLE CELLULAR PARTITIONS

William R. Burke and Frank S. McCall, Savannah, Ga., and Kenneth G. Clark, Pennington, Ernest T. De Pass, Bound Brook, and William H. Friend, Edison, N.J., assignors to Union Camp Corporation, Wayne, N.J.

Continuation-in-part of application Ser. No. 739,300, June 24, 1968, now Patent No. 3,580,471, dated May 25, 1971. This application May 14, 1971, Ser. No. 143,391

Int. Cl. B32b *31/00*

U.S. Cl. 156—257 **2 Claims**



The formation of a collapsible cellular partition module by spacing parallel sheets and locating therebetween parallel, longitudinally extending wall sheets, each wall sheet having one longitudinal edge secured to one spaced sheet and the other edge secured to the other spaced sheet. For the continuous manufacture of such modules, the spaced sheets are formed by two moving webs to which longitudinal glue lines are applied. The wall sheets are formed by webs moving between and with the first webs. The wall sheet webs are slit from a single stock roll and are scored to form longitudinal flaps to adhere to the glue lines on the respective first two webs. The first two webs are scored to form the outer wall portions of the partition module. A partition structure of desired size may be built up by assembling the required number of partition modules, the modules being secured to each other by glue areas on their spaced sheets. The partition structure may then be secured in a collapsed position within a collapsed container and both shipped as an integrated package unit for simultaneous setup.

3,809,594

MANUFACTURE OF COMPOSITE PLASTICS STRUCTURES

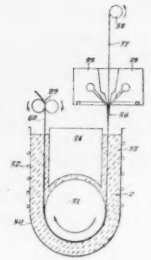
Terence John Taylor-Brown, Ipswich, and James Jack, Manningtree, England, assignors to Bakelite Xylonite Limited, London, England

Filed Oct. 8, 1971, Ser. No. 187,692

Claims priority, application Great Britain, Oct. 9, 1970, 48,141/70

Int. Cl. B29b *27/00*

U.S. Cl. 156—244 **34 Claims**



Manufacture of composite plastics structure in which an unbonded structure comprising a reinforcing layer and at least one thermoplastic layer is passed through a treatment unit in which it is subjected to heat and liquid pressure to bond the structure.

3,809,595

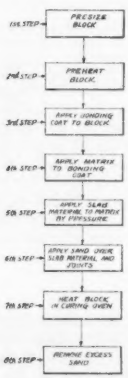
CONCRETE BLOCK OR THE LIKE WITH MULTIPLE BRICK FACING AND METHOD OF MAKING THE SAME

Charles E. Nichols, Jr., North Augusta, S.C., and Gerald T. Howard, Gracewood, Ga., assignors to Merry Companies Incorporated, Augusta, Ga.

Original application Apr. 21, 1969, Ser. No. 817,980, now Patent No. 3,660,214. Divided and this application Jan. 19, 1971, Ser. No. 107,662

Int. Cl. B44c *5/04*; B44d *1/44*

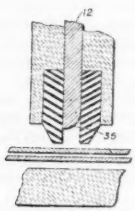
U.S. Cl. 156—267 **16 Claims**



A method and resulting structural building unit wherein a cement block, for example, has a portion removed, if necessary, to give it a predetermined vertical height. The presized block is placed upon a continuously moving conveyer and one side of the block is preheated and then

coated with a liquid metal comprising a polyester resin, a styrene monomer, a solvent, and a catalyst. The stored heat in the block quickly evaporates the solvent and polymerizes the resin and monomer so that a strongly adhering bonding coat is formed on the block. A layer of matrix material of relatively thick consistency, comprising a polyester resin, a styrene monomer, finely divided silica, colloidal silica, and a catalyst is applied to the coated block. The layer of matrix may be ⅛" thick or thicker, depending upon the type of building unit that is being made. Slabs of brick or other material are partially embedded in the matrix, in spaced relation, to form a facing for the block with simulated mortar joints. Sand is sprinkled on the facing material and the exposed matrix. The matrix is then cured or polymerized by passing the block through a curing oven. The matrix permanently bonds the facing material to the block, and renders the covered side of the block impervious to moisture. The sand adheres to the matrix, but is readily removable from the facing slabs.

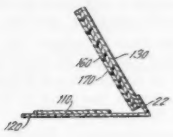
3,809,596
NON-TEAR SEAMS PRODUCED BY RADIO FREQUENCY MEANS
Lester Gidge, Nashua, N.H., assignor to Monsanto Company, St. Louis, Mo.
Original application Sept. 11, 1970, Ser. No. 71,554, now Patent No. 3,725,189. Divided and this application Mar. 14, 1972, Ser. No. 234,490
Int. Cl. B29c *27/02*
U.S. Cl. 156—380 **1 Claim**



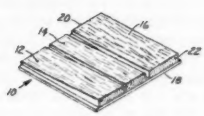
Layers of fabric containing thermoplastic fibers are bonded together by radio frequency means along a seam, the seam being comprised of fused thermoplastic fibers with the intensity of fusion varying from a maximum along a maximum bond area to a minimum along the edge of the seam to prevent the formation of a tear line between the fabric and the seam.

3,809,597
ARTICLE FOR THE FINISHING OF LEATHER
Hugh H. Connett, Wayne, Pa., assignor to Ucote Corporation, Newark, N.J.
Continuation-in-part of abandoned application Ser. No. 163,611, July 19, 1971. This application Mar. 24, 1972, Ser. No. 237,696
Int. Cl. B32b *1/04, 7/12, 27/08*
U.S. Cl. 161—39 **6 Claims**

An improved method of finishing leather by transferring an acrylic, polyurethane, or other film-forming finish coating from a release layer bearing the finish coating to the leather supported on an appropriate backing. The backing or support, the leather substrates to be coated, and the release layer are pressed into a sandwich-like assembly with the concurrent application of sufficient heat and pressure to transfer substantially the entire finish coating to the surfaces of the leathers and the backing or support juxtaposed therewith. The carrier sheet with a permanent release stratum may thereafter be re-coated and re-used in further leather finishing operations. The method may be carried out batch-wise employing discrete blocking and release layers for the transfer of finish coatings to individual leather pieces. Alternatively, the method may be performed continuously with the successive feed of leathers to be coated between a transfer web providing the desired released layer and a supporting web comprising the requisite backing or support.

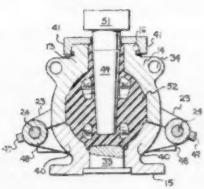


3,809,598
ROOFING MATERIAL
Robert E. Ferguson and Stuart R. Ferguson, both of 1140 San Ysidro, Beverly Hills, Calif. 90210
Filed Feb. 9, 1973, Ser. No. 331,100
Int. Cl. B32b *3/16;* B27m *3/02;* E04d *1/00*
U.S. Cl. 161—40 **8 Claims**



A roofing material consisting of slabs of bark from trees of the family Pinaceae bonded to a backing sheet of heat dissipating material for structural integrity and fire resistant qualities.

3,809,599
METHOD FOR FORMING GLASS-CERAMIC ARTICLES
Yu K. Pei, Toledo, Ohio, assignor to Owens-Illinos, Inc.
Continuation-in-part of abandoned application Ser. No. 149,650, June 3, 1971. This application June 28, 1972, Ser. No. 267,006
Int. Cl. B44f *1/00;* C03b *9/14, 29/00*
U.S. Cl. 161—1 **18 Claims**

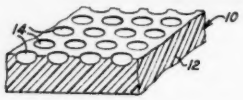


A method for making a one-piece, cored glass article of substantial mass and having a complex configuration, by forming a glass-ceramic making material in molten state

in a four-part mold having opposed members in pairs juxtapositioned and cooperating collectively to form a cored molding cavity. The closed and clamped mold includes an upper loading opening into which a pressing plunger is manipulated for pressing the material. The said material is of about 3 poise viscosity or less as it is loaded into the mold. The molten glass is pressed in the cored mold to fill the complex cavity and define the configuration of the article. Thereafter, during cooling the glass, the pressure on the glass is reduced by sequentially withdrawing the plunger and one or more of the mold faces and core sections to compensate for the difference in coefficient of expansion in the heat exchange between the contracting glass (undergoing cooling) and the expanding mold (undergoing heating). The faces of the opposed mold members are backed off from the hardening glass progressively. The formed glass liner article is cooled so as to prevent cracking, removed from the mold and inspected. Surplus inner and exterior segments of the article are then finished by drilling, cutting and grinding. The "green glass" article, partially mechanically finished, is then converted to a glass-ceramic material by heat treatment, and then given final finishing.

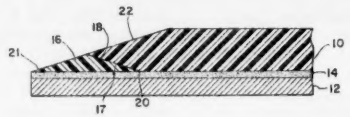
In the apparatus, a massive metal bed supports two pairs of opposed mold faces, comprised of a pair of end mold members and a pair of side mold members. The end mold members are movable longitudinally along the bed toward and away from each other and the side mold members are movable laterally of the bed toward and away from each other. The side mold members are pivotably mounted for juxtaposed positioning on the bed; the end molds are movable longitudinally along a track in the bed bottom for juxtaposed positioning cooperating with the side mold members to define a cored mold cavity for forming a one-piece article of glass. A pair of hand cranks and turn screws, mounted on each end of the bed, propels the end mold members on the bed. A closure member positioned about the top of the end members defines the loading aperture for the mold and locks the closed mold members in molding or forming position during the pressing operation.

3,809,600
THERMOPLASTIC SPLINT OR CAST
Lester M. Larson, 4619 Bailey Drive, Limestone Acres, Wilmington, Del. 19808
Continuation-in-part of application Ser. No. 683,016, Nov. 14, 1967, now Patent No. 3,490,444. This application Jan. 16, 1970, Ser. No. 3,474
The portion of the term of the patent subsequent to Jan. 20, 1987, has been disclaimed
Int. Cl. A61f *5/40*
U.S. Cl. 161—109 **12 Claims**



Polydiene sheet material useful as a body supporting member such as a cast or splint, heat softenable at a higher than body temperature, but slowly recrystallizable or hardenable below about 40° C., treated by distributing throughout the substance small pores, perforations or surface irregularities as by foaming all or only one surface portion of the sheet material, particularly texturing, knurling, pocking or cratering the surface to be placed adjacent to the body member to be encased to allow moisture and/or air transfer away from the enclosed body surface.

3,809,601
BONDED JOINT AND METHOD
James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of John B. Sainsbury-Carter, Newtown, Conn.
Filed Sept. 18, 1972, Ser. No. 290,021
Int. Cl. B32b *3/02, 3/10*
U.S. Cl. 161—116 **18 Claims**



An improved joint for reducing the peak shear stress in adhesive bonds when adhesives are used to bond two materials which are in a lapped relationship and which differ in value of modulus of elasticity. An insert placed between the adhesive and one of the two materials acts to cushion the discontinuity of material stiffness thereby reducing the peak shear stress in the adhesive bond.

3,809,602
SARAN ADHERED TO BUTADIENE-STYRENE POLYMERS
Victor Monia, Mountain View, Calif., assignor to Guardian Packaging Corporation, Newark, Calif.
Continuation of abandoned application Ser. No. 812,238, Apr. 1, 1969. This application Sept. 8, 1971, Ser. No. 178,814
Int. Cl. B32b *27/08*
U.S. Cl. 161—165 **7 Claims**

A strip of acrylonitrile-butadiene-styrene terpolymer or butadiene styrene copolymer is laminated with a coating of a vinyl chloride-vinylidene chloride copolymer. This lamination is a semi-rigid, flexible packaging material which can be readily drawn in a mold to form a food containing package. The package can be filled with food product at relatively high temperature, and provides, when sealed, a food preserving package of long shelf life.

3,809,603
LAMINATES AND ADHESIVE COMPOSITIONS
Edward Kooi, Jersey City, N.J., George Odynski, Woodhaven, N.Y., and Leo J. Stage, Roselle Park, N.J., assignors to Arvey Corporation
No Drawing. Filed Feb. 22, 1972, Ser. No. 228,397
Int. Cl. B32b *15/08, 27/38, 27/40*
U.S. Cl. 161—186 **6 Claims**

The present invention relates to improved laminates and methods of making laminates. In accordance with the invention laminate structures can be made from a preformed polyethylene homopolymer film and a metal sheet with an adhesive composition. The adhesive contains a vinyl chloride copolymer resin, a polyurethane resin, an epoxy resin, and products of in situ reactions of a polyfunctional organic isocyanate and a polyhydric phenol. The adhesive is applied in a solution of the resins in a solvent mixture selected from the group consisting of aromatic hydrocarbons, aliphatic ketones and lower alkyl esters.

3,809,604
PROCESS FOR FORMING A FLUFFED FIBROUS PULP BATT
Phillip Waite Estes, Aiken, S.C., assignor to Riegel Textile Corporation, New York, N.Y.
No Drawing. Filed Aug. 2, 1972, Ser. No. 277,280
Int. Cl. D21d *3/00*
U.S. Cl. 162—100 **2 Claims**

A process for forming a fluffed fibrous pulp batt for use in sanitary products wherein the fluffed fibrous pulp

batt has markedly improved strength and integrity with longer, stronger and more uniform fibers for producing greater loft, moisture absorption and strength in the batt. The process includes includes the continuous steps of treating of the wet pulp to effect kinking and interlocking of the fibers, forming the fibers into a wet pressed pulp sheet, drying, mechanically fiberizing the sheet and air-laying the debonded kinked fibers to form a fluffed pulp batt with improved strength and integrity due to the kinked and interlocked fiber formation. Preferably, the process also includes the steps of producing a dilute, aqueous slurry of the kinked and interlocked fibers and incorporating in the slurry a cationic debonding agent, so that minimum breakage of the fibers will result during the mechanical fiberizing step due to the debonding effect of that cationic debonding agent, and a fluffed pulp batt will be produced with minimum fiber breakage therein.

3,809,605

FIBROUS MATS AND SHEETS CONTAINING IMMOBILIZED ENZYMES ENTRAPPED IN THEIR INTERSTICES

Edward Emil Schmitt, Norwalk, Conn., Rocco Albert Polistina, Port Chester, N.Y., and Peter Salvatore Forgione, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Oct. 30, 1972, Ser. No. 302,370

Int. Cl. D21d *3/00*

U.S. Cl. 162—158 **10 Claims**

A liquid laid web comprising cellulosic or other fiber forming material having a carrier bound enzyme dispersed throughout the interstices thereof in an amount of 5–50% by weight.

3,809,606

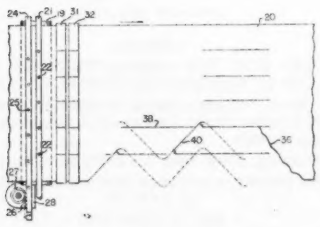
METHOD AND APPARATUS FOR REPAIRING A DIAGONAL BREAK IN A PAPER WEB

John J. Stansbrey, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed July 13, 1972, Ser. No. 271,541

Int. Cl. D21f *7/04*

U.S. Cl. 162—194 **5 Claims**



A mechanism for automatically repairing breaks in a web of paper is disclosed in addition to a method for repairing such breaks. Included in the mechanism is a plurality of banks of sensing devices for determining the location of the break, a control unit for receiving information from the sensing devices and a plurality of banks of water jets selectively operated by the control unit to provide a plurality of longitudinal and diagonal slits in the web of paper for confining and eliminating the tear portion of the web, the longitudinal slits being interrupted when intersecting the diagonal slits.

3,809,607

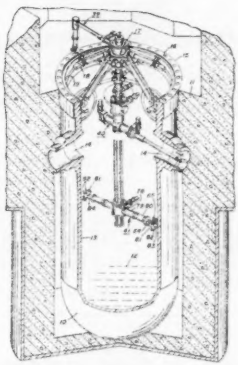
REACTOR VESSEL IN-SERVICE INSPECTION ASSEMBLY

Thomas R. Murray, Munhall, and David C. Burns, Trafford, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 23, 1971, Ser. No. 201,420

Int. Cl. G21c *17/00*

U.S. Cl. 176—19 R **20 Claims**



A nuclear reactor vessel in-service inspection assembly is provided for remotely, accurately positioning the inspection tool within the reactor vessel. The assembly has integral adjustment means whereby the tool is adapted to be used with a wide variety of vessel sizes. The inspection assembly is primarily adapted for ultrasonic, volumetric examination of the weld areas of the reactor vessel.

3,809,608

REACTOR VESSEL ANNEALING APPARATUS

Leonard R. Katz and Edgar I. Landerman, Pittsburgh, and Walter E. Desmarchais, Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

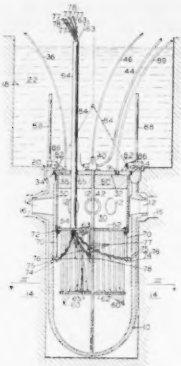
Filed May 10, 1972, Ser. No. 251,962

Int. Cl. G21c *13/00, 17/00*

U.S. Cl. 176—87 **12 Claims**

An annealing apparatus for use with an operational nuclear reactor vessel is disclosed. The apparatus is used for annealing a reactor vessel with the reactor internals, core and the primary system water removed from the vessel. The apparatus includes a support plate sized to be snugly received in the upper section of the vessel, with a seal ring being provided on the plate for forming a water tight seal in the space between the plate and the vessel. Heating means such as elongated resistance heating rods are supported by the plate and are disposed in the vessel in a heat transfer relationship with the section of the vessel immediately adjacent to the reactor core. A pump is supported on the plate for pumping the water out of the vessel after the annealing apparatus is placed in position

within the vessel. The disclosed apparatus also includes reflective heat insulation means secured to the lower surface of the support plate; pressure equalizing tubing for effecting atmospheric pressure within the vessel during operation



of the annealing apparatus; means arranged between the support plate and vessel for guiding the apparatus into and out of the vessel; and extendible and retractible temperature sensors arranged to contact the vessel wall during the annealing operation.

3,809,609

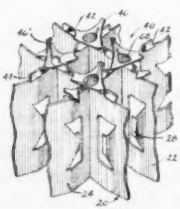
TWISTED TAPE FLOW DEFLECTOR IN A NUCLEAR REACTOR FUEL ASSEMBLY

Donald Michael Krawiec, Enfield, and Frank Bevilacqua, Windsor, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed June 27, 1972, Ser. No. 266,756

Int. Cl. G21c *3/32, 15/24*

U.S. Cl. 176—78 **15 Claims**



A nuclear reactor fuel assembly containing a plurality of spaced, parallel fuel rods is provided with flow deflector vanes that operate on the liquid coolant flowing along channels between adjacent fuel elements to promote mixing of the coolant and also to produce more effective contact of the fuel rod surfaces with the liquid. The vanes are of particular configuration and are integrally formed on twisted, thin metal ribbon strips. The ribbon strips can be individually disposed between adjacent rows of fuel elements or interconnected to form a grid-like structure through which the fuel elements extend.

3,809,610

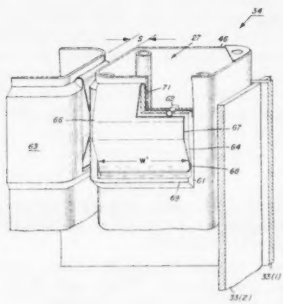
NUCLEAR FUEL ASSEMBLY WITH BYPASS COOLANT CONTROL

Bart A. Smith, James L. Lass, and Dominic A. Venier, San Jose, Calif., assignors to General Electric Company

Filed Nov. 26, 1971, Ser. No. 202,407

Int. Cl. G21c *3/34, 15/24*

U.S. Cl. 176—78 **4 Claims**



A structure for limiting the exit area of the bypass coolant flow channels between the fuel assemblies in a nuclear reactor core.

3,809,611

PROCESS FOR PRODUCING CITRIC ACID

Kenichiro Takayama, Machida, and Tomoko Tomiyama, Tokyo, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

No Drawing. Filed Jan. 11, 1973, Ser. No. 322,724

Claims priority, application Japan, Jan. 13, 1972, 47/5,524

Int. Cl. C12d *1/04*

U.S. Cl. 195—30 **5 Claims**

Citric acid is produced by culturing *Candida zeylanoides* No. 19–5 ATCC 20347 in a nutrient medium containing acetic acid as the main carbon source. Citric acid and/or isocitric acid is accumulated in the nutrient medium and is thereafter recovered.

3,809,612

PROCESS FOR THE PRODUCTION OF CITRIC ACID BY SUBMERGED FERMENTATION

Adel J. Kabil, Vienna, Austria, assignor to Aktiengesellschaft Jungbunzlauer Spiritus- und Chemische Fabrik, Vienna, Austria

No Drawing. Filed Aug. 23, 1971, Ser. No. 174,152

Claims priority, application Austria, Aug. 21, 1970, A 7,632/70

Int. Cl. C12d *1/04*

U.S. Cl. 195—36 R **12 Claims**

A process for the production of citric acid by submerged fermentation of carbohydrate-containing material by means of the fungus *Aspergillus niger* is disclosed. The process, which is carried out in a nutrient medium containing alkali ions and phosphate ions, involves adjusting the weight ratio of alkali ions to phosphate ions to a value of 1.01 to 3.42:1 by adding sodium chloride to the fermentation medium in an amount such that the weight ratio of sodium ions to potassium ions is 1.46 to 7.30:1.

3,809,613

BIOCATALYTIC MODULE

Wolf R. Vieth, Belle Mead, Shaw S. Wang, North Brunswick, Seymour G. Gilbert, Piscataway, and Kalyanasundram Venkatasubramanian, New Brunswick, N.J., assignors to Research Corporation, New York, N.Y.

Filed May 28, 1971, Ser. No. 148,018
Int. Cl. C07g 7/02
U.S. Cl. 195—63 7 Claims

A biocatalytic module comprising an immobilized enzyme-membrane complex formed into a film having an elongate surface for enzyme-substrate contact; support means maintaining said elongate surface in a predetermined, substantially elongate form; spacing means substantially preventing different portions of said elongate surface from touching each other; and conduit means minimizing dispersion of a fluid substrate by substantially restricting the flow of the substrate to a direction parallel to the axis of the elongate surface. The biocatalytic modules are easily formed into insertable modules having high surface-to-volume ratios, and are useful for a wide variety of applications in enzymology.

3,809,614

PROCESS FOR THE MANUFACTURE OF PROTEIN-CONTAINING SUBSTANCES FOR FODDER, FOODSTUFFS AND TECHNICAL APPLICATIONS

Kaj G. Forss, George Otto Gadd, and Ralf O. Lundell, Helsinki, and Harry W. Williamson, Kauniainen, Finland

No Drawing. Filed Aug. 5, 1971, Ser. No. 169,473
Claims priority, application Finland, Aug. 14, 1970, 2,242/70
Int. Cl. A23j 1/00; C12b 1/00
U.S. Cl. 195—81 9 Claims

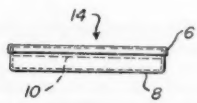
Proteinaceous substances suitable for use as fodder and foodstuffs are manufactured by submerged aerobic culture of a species of mycelium-growing micro-organism of the genus Byssochlamys, Gliocladium, Paecilomyces, Spicaria or Trichoderma.

3,809,615

METHOD AND MEANS FOR NATURAL GAS DETECTION

Donald Leroy Klass, 21 E. Scott Road, Barrington, Ill. 60010, and John Joseph Azukas, 4421 Prescott, Lyons, Ill. 60534

Continuation-in-part of abandoned application Ser. No. 831,000, June 6, 1969. This application Jan. 10, 1972, Ser. No. 216,810
Int. Cl. G01n 31/14
U.S. Cl. 195—103.5 R 9 Claims



Method and apparatus for detecting the presence of ambient gaseous light paraffins with an immobilized enzyme system fraction collected from microorganisms which can oxidize C_1–C_4 hydrocarbons. An immobilized enzyme system separated from a methane-obligate microorganism can be used to advantage for identifying methane in natural gas. A detection means is associated with the method and apparatus which is sensitive to a response of the separated enzyme system fraction to the presence of the gaseous hydrocarbons.

3,809,616

DETECTING ANTI-CHOLINESTERASE MATERIALS

Edward Emil Schmitt and Richard Carl Capozza, Norwalk, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Nov. 15, 1972, Ser. No. 306,780
Int. Cl. C12k 1/10
U.S. Cl. 195—103.5 R 10 Claims

A method for detecting the presence of anticholinesterase materials wherein a cellulosic sheet having sulfited polyacrolein bound cholinesterase dispersed throughout the interstices thereof is wetted with a liquid having a pH of 7.0–7.5 and the wetted sheet, after exposure to air or water suspected of containing anticholinesterase materials, is contacted with a solution of N-methyl indoxyl butyrate and the presence of the anticholinesterase materials is determined from the observed color.

3,809,617

DEVICE FOR DETECTING ANTICHOLINESTERASE MATERIALS

Edward Emil Schmitt, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Nov. 15, 1972, Ser. No. 306,972
Int. Cl. C12k 1/10
U.S. Cl. 195—127 10 Claims

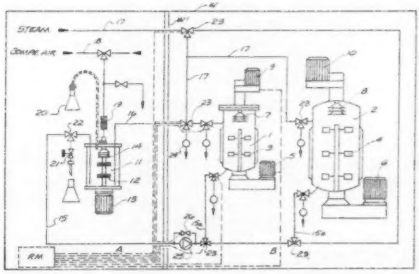
An article of manufacture comprising, in superimposed relationship, (A) a self-supporting layer, (B) a cellulosic element having sulfited polyacrolein bound cholinesterase dispersed throughout the interstices thereof and (C) an active cholinesterase free cellulosic layer having the same physical properties of color and texture as the cellulosic element (B) after both have been wetted with buffer and an appropriate detection solution.

3,809,618

FERMENTATION INSTALLATION

Hans Muller, 415 Alte Landstrasse, 8908 Mannedorf, Switzerland

Filed June 7, 1972, Ser. No. 260,390
Claims priority, application Switzerland, June 8, 1971, 8,578/71
Int. Cl. C12b 1/00
U.S. Cl. 195—140 8 Claims



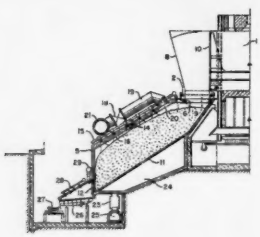
Two enclosed chambers are provided, in one of which a fermentation system is located, including a plurality of vessels. The regulating devices for regulating the operation of the fermentation system are located in the other chamber and operatively associated with the fermentation system. A control unit, including a receptacle, is also located in the other chamber and connected with the fermentation system in such a manner that its receptacle can be selectively connected with the respective vessels of the system.

3,809,619

COMBINED WET AND DRY QUENCHING

Friedrich-Wilhelm Drebes, Bochum-Dahlhausen, and Gunter Birresborn, Bochum, Germany, assignors to Dr. C. Otto & Comp., G.m.b.H., Bochum, West Germany

Filed May 17, 1972, Ser. No. 254,087
Int. Cl. C10b *39/00*
U.S. Cl. 201—39 5 Claims



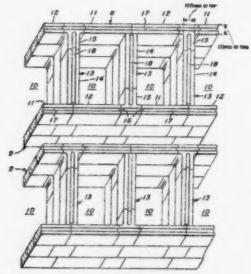
Coke from a horizontal coke oven is pushed into a guide casing, from which it falls into a cooling chamber. After the inlet to the chamber has been closed the coke is sprinkled with water to reduce its average temperature to below about 600° C., following which an inert cooling gas is passed through the coke to further reduce its temperature to about 200° C. and then the quenched coke is discharged from the chamber.

3,809,620

HORIZONTAL COKE OVEN

Folkard Wackerbarth, Bochum, and Kurt-Günther Beck, Essen, Germany, assignors to Dr. C. Otto & Comp., GmbH, Bochum, Germany

Filed July 25, 1972, Ser. No. 274,480
Claims priority, application Germany, Dec. 14, 1971, P 21 61 980.7
Int. Cl. C10b *1/06, 5/02*
U.S. Cl. 202—139 4 Claims



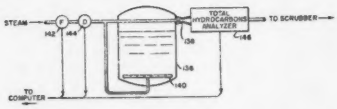
A high capacity coke oven including a battery of horizontally spaced coke oven chambers each having heating walls. Vertical heating flues are formed by a plurality of bondstone walls between the heating walls for adjacent coke chambers. The bondstone walls are constructed from bricks having a thickness between 60 to 80 millimeters. The heating walls are constructed from stretcher bricks having a thickness between 70 to 90 millimeters in the heat transfer direction extending from the heating flue to the coke oven chamber.

3,809,621

COMPUTER CONTROL SYSTEM FOR REFINING AND HYDROGENATION OF UNSATURATED HYDROCARBONS

Richard E. Putman, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Origiral application Dec. 16, 1969, Ser. No. 885,405, now Patent No. 3,653,842, dated Apr. 4, 1972. Divided and this application Dec. 14, 1971, Ser. No. 208,009
Int. Cl. B01d *3/38, 3/40*
U.S. Cl. 202—205 4 Claims



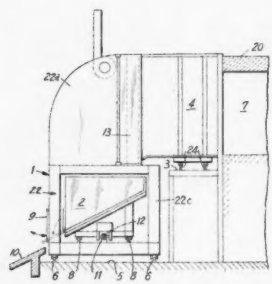
Described is a control system for a refining hydrogenation and deodorizing plant for edible oils and the like wherein various system variables are converted into signals which are fed to a computer which controls the system to optimize performance and reduce oil losses.

3,809,622

APPARATUS FOR EMPTYING COKE FURNACE BATTERIES

Johannes Knappstein and Jan Voges, Recklinghausen, Germany, assignors to Firma Carl Still, Postfach, Germany

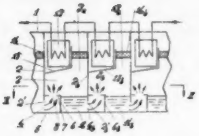
Filed May 24, 1972, Ser. No. 256,351
Claims priority, application Germany, June 30, 1971, P 21 32 554.2
Int. Cl. C10b *27/00, 33/00*
U.S. Cl. 202—263 10 Claims



A device for emptying horizontally arranged coke furnace batteries comprises a coke gas emission hood which includes an upper portion with a sealing flap part which is adapted to be aligned with and sealed with a coke guide car which is oriented at the entrance of one of the furnaces which are to be emptied. The emission hood includes a lower part which advantageously has an opening at at least one end to permit entry and passage of a coke car along horizontally extending trackways defined on a lower portion of the hood structure. The hood structure may be moved along a trackway which extends parallel to an operating stage trackway for a coke cake guide car and the upper sealing portion of the hood may be aligned with the guide car which in turn may be aligned with selective coke furnaces to permit discharge of the coke from the furnace through the guide car and into the upper portion of the hood and downwardly into the coke car which is positioned therebelow. The coke car may be

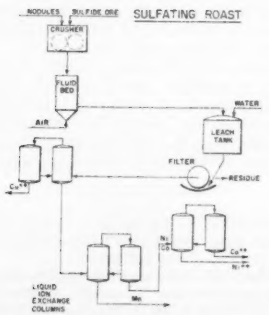
shifted along the hood and/or the hood itself may be shifted in order to permit discharge of the coke after quenching in the quenching tower.

3,809,623
EVAPORATING METHOD AND EVAPORATING APPARATUS
Tetsugoro Sasakura and Takashi Kurosaka, Hyogo, Japan, assignors to Sasakura Engineering Co., Ltd., Osaka, Japan
Filed Mar. 5, 1971, Ser. No. 121,449
Claims priority, application Japan, Mar. 9, 1970, 45/19,281
Int. Cl. B01d *3/06*
U.S. Cl. 203—11 **15 Claims**



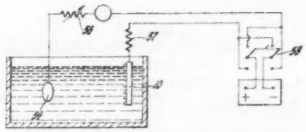
A multi-stage flash type evaporating apparatus and method, in which a series of plural throttles are provided at any or each brine flow passage between adjacent stages and the opening area ratio between the throttles is restricted within a certain range. A part of the throttles may be arranged to form a box with one throttle opened on its upper surface. The box may have a peripheral wall extending thereabove.

3,809,624
MIXED ORE TREATMENT OF OCEAN FLOOR NODULE ORE AND IRON SULFIDIC LAND BASED ORES
William S. Kane, Wicomic, and Paul H. Cardwell, Zanoni, Va., assignors to Deepsea Ventures, Inc., Gloucester Point, Va.
Continuation-in-part of application Ser. No. 260,344, June 6, 1972, which is a continuation of application Ser. No. 40,496, May 26, 1970, now abandoned. This application Nov. 27, 1972, Ser. No. 309,714
Int. Cl. C22d *1/24, 1/14, 1/16*
U.S. Cl. 204—105 M **15 Claims**



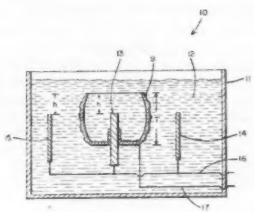
This invention provides a process for simultaneously obtaining the metal values from ocean floor nodule ore and from an iron sulfide mineral. The nodule ore comprises primarily oxides of iron and manganese plus nickel, copper and cobalt compounds. The ore is reacted with the iron sulfide ore, which may also contain desired nonferrous metal values at elevated temperatures in the presence of oxygen to form iron oxide and the water-soluble sulfates of the non-ferrous metals. The mixed reacted ores are then leached with water to obtain a solution and the resultant pregnant leach solution is treated, as by liquid ion exchange processes, to obtain separate streams of the individual metal values of nickel, cobalt, copper and manganese. The metals can be obtained by cathodic reduction of the compounds.

3,809,625
METHOD OF MAKING CONTACT BUMPS ON FLIP-CHIPS
Ronald E. Brown and James A. Oakes, Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 15, 1972, Ser. No. 280,795
Int. Cl. C23b *5/48;* **H01l** *3/00*
U.S. Cl. 204—15 **5 Claims**



A method of forming integral ohmic leads on a semiconductor device which includes the process of selectively electrodepositing collapsible and noncollapsible contact bumps on a blanket chromium layer without masking the chromium layer.

3,809,626
ELECTROPLATING ON A TRUNCATED BALL SUITABLE FOR USE IN A TYPEWRITER
Ronald M. Stene, Woodville, Wis., assignor to Buckbee-Mears Company, St. Paul, Minn.
Filed Oct. 17, 1972, Ser. No. 298,308
Int. Cl. B44d *5/02;* **C23b** *5/62*
U.S. Cl. 204—20 **2 Claims**

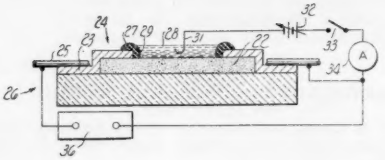


The surface of a plastic typewriter ball is processed in various solutions in order to prepare the surface to receive a uniformly distributed metallic coating.

3,809,627
ANODIZED CERMET FILM COMPONENTS AND THEIR MANUFACTURE
Donald J. Sharp, Trenton, N.J., and Richard D. Sutch, Allentown, Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.
Original application Nov. 19, 1968, Ser. No. 776,962, now Patent No. 3,644,188. Divided and this application July 22, 1971, Ser. No. 165,376
Int. Cl. C23b *5/52, 11/02*
U.S. Cl. 204—37 R **3 Claims**

A film-forming metal and a ceramic are co-sputtered on a glass substrate to form an anodizable cermet film whose resistance, as measured between a pair of conductive terminals deposited thereon, is less than a predetermined value. The film is anodized electrolytically to increase or

"trim" its terminal resistance to the predetermined value. Interaction between the ceramic and the anodically-grown oxide of the film-forming metal during the anodizing step



stabilizes the terminal resistance so that the trimmed value is maintained within close tolerances during subsequent thermal aging and operation.

3,809,628

GOLD ALLOY PLATING PROCESS AND SOLUTION

Gwynne I. Edson, Russell, and Keith R. Reynolds, Warren, Pa., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Jan. 29, 1973, Ser. No. 327,397
Int. Cl. C23b *5/42*
U.S. Cl. 204—43 G **7 Claims**

A gold alloy electroplating process and solution is disclosed wherein the solution consists essentially of from about 12 to about 38 grams of gold as potassium aurocyanide, from about 10 to about 150 grams of magnesium acetate, from about 0 to about 100 grams of a salt of an organic acid having a cation selected from the group consisting of alkali metal and ammonium ions, said acid being selected from the group consisting of acetic and citric, and from about .005 to about .400 gram of a soluble metal source selected from the group consisting of the sources of cobalt and nickel or mixtures thereof, respectively, per liter of solution.

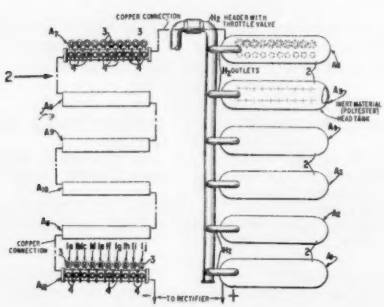
The solution has a pH of from about 3.6 to about 4.2 and can be satisfactorily employed at temperatures within the range of from about 70° to about 120° F.

3,809,629

PROCESS AND APPARATUS FOR THE PRODUCTION OF ALKALI METAL CHLORATES

Georg Messner, Munich, Germany, and Vittorio de Nora, Nassau, Bahama Islands, assignors to Oronzio de Nora Impianti Elettrochimici S.p.A., Milan, Italy

Filed Mar. 28, 1972, Ser. No. 238,804
Int. Cl. B01k *1/00;* **C01b** *11/26*
U.S. Cl. 204—95 **8 Claims**



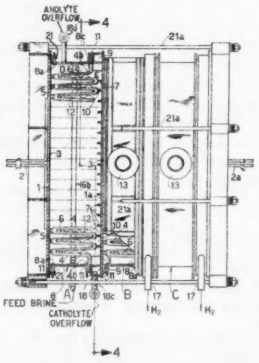
An apparatus and process for increasing percentage yield concurrent with increased current efficiency in electrolytic conversion of alkali metal chloride in an electrolyzer into alkali metal chlorate and formation of the chlorate by chemical disproportionation in separate chlorate formation zones, the use of bipolar electrolyzers is preferred but not necessary.

3,809,630

ELECTROLYSIS CELL WITH PERMEABLE VALVE METAL ANODE AND DIAPHRAGMS ON BOTH THE ANODE AND CATHODE

Oronzio de Nora, Milan, Italy, and Vittorio de Nora, Nassau, Bahama Islands, assignors to Oronzio de Nora Impianti Elettrochimici S.p.A., Milan, Italy

Continuation-in-part of application Ser. No. 51,162, June 20, 1970. This application Feb. 17, 1972, Ser. No. 227,116
Claims priority, application Italy, Oct. 19, 1971, 30,038/71
Int. Cl. C01d *1/06*
U.S. Cl. 204—98 **18 Claims**



Describes an electrolysis cell, and method of operating the cell, having permeable valve metal anodes (preferably titanium or tantalum) and permeable metal cathodes in wave form, each with closed ends and each covered by diaphragms, with the waves of the cathode fingers lying between the waves of the anode fingers to provide a large electrode area in a small cell container. The anodes and cathodes in wave form are intermeshed together and the cell may be unipolar, or bipolar with terminal positive and negative end cell units and a plurality of intermediate cell units. The anolyte and cathoylte discharge means are adjustable in order to control the anolyte and catholyte liquor levels behind each diaphragm.

3,809,631

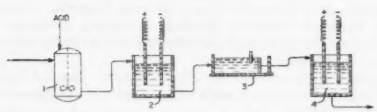
METHOD FOR TREATING OIL-CONTAINING WASTES

Masanori Ohta, 55 Takehana-Nishinokuchi-cho, Yamashina, Higashiyama-ku, Kyoto-shi, Kyoto-fu, Japan

Filed Mar. 8, 1973, Ser. No. 339,131
Claims priority, application Japan, Mar. 9, 1972, 47/23,558
Int. Cl. C02c *5/12*
U.S. Cl. 204—149 **2 Claims**

A method for treating industrial wastes containing oils and surfactants, which comprises adjusting the pH of such wastes to 3 or less, subjecting the wastes to an electrolytic treatment using an anode composed of an acid-resistant electrode material and a cathode composed of an ordinary electrode material thereby separating the oil phase from

the aqueous phase having the surfactants dissolved therein, and then subjecting the aqueous phase separated from



the oil phase to an electrolytic treatment using an anode and a cathode composed of aluminum thereby precipitating the surfactants as sludge separated from water.

3,809,632

PROCESS FOR PHOTOCHEMICAL AND THERMAL PRODUCTION OF COBALT COMPLEXES

Giacomo Costa and Giovanni Mestroni, Trieste, Italy, assignors to Snam Progetti S.p.A., Milan, Italy

No Drawing. Continuation of abandoned application Ser. No. 814,854, Apr. 9, 1969. This application June 7, 1971, Ser. No. 150,803

Int. Cl. B01j *1/10;* **C07f** *15/06*

U.S. Cl. 204—158 R **2 Claims**

An improved process is disclosed for preparing compounds of the formula R'COCo(III) salen by reacting RCo(III) salen with carbon monoxide and an active hydrogen compound R'H, wherein R is alkyl and R' is oxyalkyl, said reaction being effected under ultraviolet radiation and in the presence of oxygen.

3,809,633

CHAIN EXTENDED POLYTHIOETHER POLYENE PHOTOCURABLE COMPOSITIONS

Frank Magnotta, Laurel, Arthur D. Ketley, Ellicott City, and Clifton L. Kehr, Silver Spring, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Mar. 8, 1972, Ser. No. 232,904

Int. Cl. C08d *1/00;* **C08f** *1/16;* **C08g** *11/54*

U.S. Cl. 204—159.14 **11 Claims**

Novel chain-extended polythioether containing polymer compositions having a multiplicity of reactive unsaturated carbon to carbon functional groups and/or reactive thiol groups within the molecule. These highly reactive polymer compositions are rapidly curable to solid, cross-linked polythioether products in the presence of a free radical generator such as actinic radiation. These non-ionic chain extended photocurable compositions are prepared by polymerizing polyenes and polythiols in the presence of free radical generators such as actinic radiation or oxygen. The chain extended polythioether containing polymers which are solvent soluble, particularly water soluble have a molecular weight in the range of 300 to 250,000 and range from liquid to solid materials which are essentially gel free i.e. having a gel content of not greater than about 1%.

3,809,634

INTERRUPTED CURRENT ELECTRODEPOSITION OF PAINTS

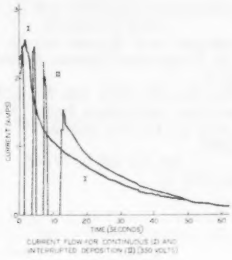
William B. Brown, Birmingham, and Gregory A. Campbell, Romeo, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 29, 1972, Ser. No. 310,328

Int. Cl. C23b *13/00*

U.S. Cl. 204—181 **4 Claims**

Electrodeposition of water dispersible paint resins on a metallic, anodic electrode substrate can be accomplished at voltages above the normal rupture voltage for the particular resin to achieve better throw of the paint coating by measuring the flow of current during the coating process and interrupting the flow of current a few occasions at specific times. In a typical electrophoretic resin deposition process, during the first seconds there is a high current flow which quickly decreases. If one is electrodepositing at a voltage near or above the rupture voltage of the resin employed, the current will then start to increase again. By interrupting the current before or just after the current flow has increased, film rupture may be minimized or



avoided and a smoother, more coextensive paint film obtained. Current flow is then soon reinstated and interrupted again, this being repeated up to three to five times, after which there is no further tendency for the current to increase and the deposition may be completed at the relatively high voltage without further current interruptions.

3,809,635

METHOD OF INCREASING THE ADHESION OF A METAL BODY SURFACE TO RUBBER

Jacques Gillot and Beuno Lux, Geneva, Switzerland, assignors to Battelle Memorial Institute, Carough, Geneva, Switzerland

No Drawing. Filed Nov. 4, 1971, Ser. No. 195,855

Claims priority, application Switzerland, Nov. 18, 1970, 17,152/70

Int. Cl. C23b *1/00;* **C23c** *15/00*

U.S. Cl. 204—192 **2 Claims**

A method of increasing the adhesion of the surface of a metal body, particularly steel wire, to rubber and vice versa by coating the surface of the metal body with a carbon layer firmly adhering thereto. The carbon layer may be applied by evaporation of carbon under vacuum or by subjecting the surface of the metal body to a corrosive treatment to remove the metal from the surface portion while leaving the carbon.

3,809,636

DEVICE FOR MEASURING AN ACTIVITY OF SILVER IONS

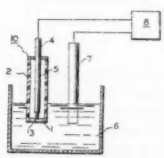
Kenji Higashiyama and Hiroshi Hirata, Katano, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 28, 1972, Ser. No. 229,812

Claims priority, application Japan, Mar. 2, 1971, 46/11,124, 46/11,125; Mar. 3, 1971, 46/11,408, 46/11,409

Int. Cl. G01n *27/46*

U.S. Cl. 204—195 M **5 Claims**



A device for measuring an activity of silver ions comprises a selective electrode and a reference electrode im-

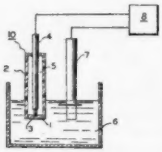
mersed in a solution containing silver ions, said selective electrode including a disc which comprises silver selenide or silver telluride or at least two members selected from the group consisting of silver sulfide, silver selenide and silver telluride.

3,809,637

DEVICE FOR MEASURING AN ACTIVITY OF CUPRIC IONS

Kenji Higashiyama and Hiroshi Hirata, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 28, 1972, Ser. No. 229,911
Claims priority, application Japan, Mar. 2, 1971, 46/11,124, 46/11,125; Mar. 3, 1971, 46/11,408, 46/11,409
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 M **7 Claims**



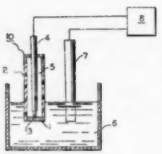
A device for measuring an activity of cupric ions comprises a selective electrode and a reference electrode immersed in a solution containing cupric ions, said selective electrode including a disc in a batch composition which comprises a combination of cuprous chalcogenide and at least one member selected from the group consisting of silver telluride and silver selenide or in a batch composition which comprises a combination of silver sulfide and at least one member selected from the group consisting of cuprous telluride and cuprous selenide.

3,809,638

DEVICE FOR MEASURING AN ACTIVITY OF MANGANOUS IONS

Kenji Higashiyama and Hiroshi Hirata, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 28, 1972, Ser. No. 229,914
Claims priority, application Japan, Mar. 2, 1971, 46/11,124, 46/11,125; Mar. 3, 1971, 46/11,408, 46/11,409
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 M **6 Claims**



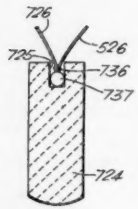
A device for measuring an activity of manganous ions comprises a selective electrode and a reference electrode immersed in a solution containing manganous ions, said selective electrode including a disc in a batch composition which comprises a combination of manganous chalcogenide and silver telluride or in a batch composition which comprises a combination of manganous telluride and at least one member selected from the group consisting of silver sulfide, silver selenide and silver telluride.

3,809,639

SOLID ELECTROLYTE COMPACT FOR PROBE USED IN QUANTITATIVE DETERMINATION OF GAS DISSOLVED IN MOLTEN METAL

Donald K. Faurschou, Kanata, Ontario, and Donald C. Misener and James C. Pope, Ottawa, Ontario, Canada, and Richard Hadden, Paisley, Scotland, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Original application July 15, 1970, Ser. No. 54,937. Divided and this application Apr. 12, 1972, Ser. No. 243,492
Claims priority, application Canada, Dec. 24, 1969, 70,847
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 S **4 Claims**



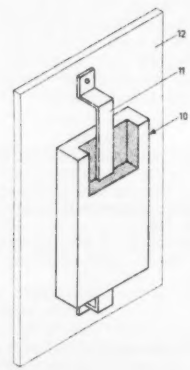
Solid electrolyte compacts are provided for use in a probe tip for the quantitative determination of gas dissolved in molten metal, the electrolyte being an elongated compact formed of solid oxide electrolyte which both retains its ionic conduction properties and which does not exhibit substantial electronic conduction properties at the temperature of the molten metal, said solid electrolyte being, for example, lime-stabilized zirconia. The compact also includes a fugitive binder, e.g., polyvinyl alcohol, and optionally contains a small amount of a suitable high temperature binder. The compact is provided with a beaded wire-accepting depression axially therein.

3,809,640

SACRIFICIAL ANODE

Gernot Jacob, Schaffhausen, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Apr. 26, 1972, Ser. No. 247,860
Claims priority, application Switzerland, Apr. 27, 1971, 6,141/71
Int. Cl. C23f *13/00*
U.S. Cl. 204—197 **1 Claim**



The invention concerns a sacrificial anode, consisting of a finely porous aluminium casting as an anode and an

anode carrier of steel attached thereto whereby between the anode carrier and the casting is provided a diffusion zone of anode or similar material in order to maintain a constant internal resistance of said structure during its operational life.

3,809,641

ELECTROPLATING APPARATUS WITH PLATING VESSEL HAVING PROTRUSIONS AND RECESSES

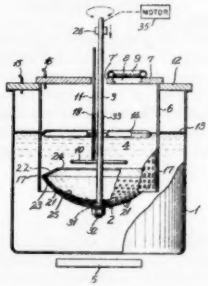
Akira Miyata, Tokyo, Hideyo Okubo and Chikayoshi Tomita, Yokohama, and Akio Suzuki, Tokyo, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of application Ser. No. 57,865, June 12, 1970, which is a division of application Ser. No. 747,367, July 24, 1968, both now abandoned. This application Sept. 8, 1972, Ser. No. 287,271

Claims priority, application Japan, May 11, 1968, 43/31,518

Int. Cl. C23b *5/78*

U.S. Cl. 204—213 **18 Claims**



An electroplating apparatus wherein articles to be plated are placed in a vessel and immersed in a fused salt plating bath. The vessel is the cathode and an annular anode is disposed over the articles. The vessel is intermittently rotated during the plating operation to drive the articles towards the periphery and then gather them in the center of the vessel. The vessel is pan-shaped and has protrusions and recesses in the surface thereof to provide better contact with articles to be plated, and has perforations therein to enable the fused salt bath to flow therethrough.

3,809,642

ELECTROFORMING APPARATUS INCLUDING AN ANODE HOUSING WITH A PERFORATE AREA FOR DIRECTING ION FLOW TOWARDS THE CATHODE

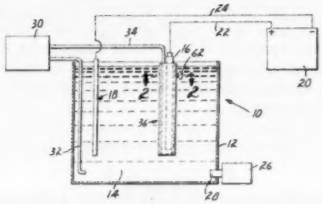
Herbert M. Bond, Stillwater, and Charles E. Ring, Lake St. Croix Beach, Minn., assignors to Buckbee-Mears Company, St. Paul, Minn.

Continuation of abandoned application Ser. No. 868,390, Oct. 22, 1969. This application Oct. 28, 1971, Ser. No. 193,528

Int. Cl. C23b *5/68*

U.S. Cl. 204—275 **1 Claim**

A method and device are provided for the precision electro deposition of metals by electroforming. The electroformed product can be made with metal deposition thickness controlled within ±10% on deposits as thin as 0.005 mm. The method comprises directing and controlling the flow of metal ions from the anode ion donor to the cathode ion receptor by means of a unique ion flow directing system comprising an anode and a dielectric nonporous perforate ion-flow directing device which proximately and spacedly surrounds the anode, thereby allowing the flow of the electrolytic solution about the entire area of the anode and directing such flow of ion rich electrolyte in a relatively undiffused path to the cathode.



In another aspect, the invention discloses a precision electrical circuit made by the utilization of the process indicated above.

3,809,643

OXIDATIVE SWEETENING OF HYDROCARBONS WITH A CALCINED CATALYST CONTAINING COPPER, IRON AND OXYGEN

Sun W. Chun, Murrysville, Harry A. Hamilton, Natrona Heights, and Angelo A. Montagna, Monroeville, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed July 15, 1971, Ser. No. 163,068

The portion of the term of the patent subsequent to June 26, 1990, has been disclaimed

Int. Cl. C10g *27/04*

U.S. Cl. 208—191 **14 Claims**

An oxidative sweetening process using a catalyst comprising a copper salt and a Group VIII iron group metal salt, preferably iron. The catalyst can be either supported or unsupported. The unsupported catalyst can be prepared by physically admixing and pelletizing copper chloride and ferric oxide or impregnating gelatinous iron oxide with a solution of copper chloride.

3,809,644

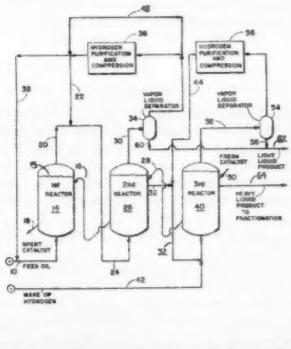
MULTIPLE STAGE HYDRODESULFURIZATION OF RESIDUUM

Axel R. Johnson, North Babylon, N.Y., Ronald H. Wolk, Trenton, N.J., and Govanon Nongbri, Newtown, Pa., assignors to Hydrocarbon Research, Inc., New York, N.Y.

Filed Aug. 1, 1972, Ser. No. 276,907

Int. Cl. C10g *31/14*

U.S. Cl. 208—210 **9 Claims**

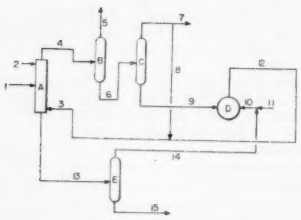


The production of low sulfur fuel oil from high sulfur, high metals-containing petroleum residuum stocks is ac-

complished by a multiple stage ebullated bed hydrogenation process, wherein fresh catalyst used in the final stage reaction zone is removed and introduced to the preceding reaction zone to materially extend the activity and effective life of the catalyst. All the fresh make-up hydrogen for the process is injected into the final reaction zone, so that the hydrogen sulfide in the gas leaving that reaction zone is maintained below about three mole percent so as to substantially improve the desulfurization reaction rate in that reactor.

3,809,645
RECOVERING METHACRYLIC ACID AND METHANOL
Hideo Matsuzawa and Takashi Tokutomi, Ohtake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan
Filed Apr. 3, 1973, Ser. No. 347,414
Int. Cl. B01d *11/04*
U.S. Cl. 210—21 **7 Claims**

ONE EMBODIMENT OF PROCESS OF THE PRESENT INVENTION



An aqueous solution (A) containing 3–50% by weight of methacrylic acid, 0.1–14% by weight of acetic acid and a small amount of impurities, if any, a liquid mixture (B) containing 40% by weight or more of methyl methacrylate, 3–40% by weight of methanol, 22% by weight or less of water and a small amount of impurities, if any, and water (C) other than the water contained in said (A) and (B) are supplied to an extractor, thereby effecting a liquid-liquid contact. A liquid mixture containing methacrylic acid and methyl methacrylate as main components and a liquid mixture containing methanol, water and acetic acid as main components are separated by the liquid-liquid contact, whereby methacrylic acid is separated from the solution (A), and methanol from the liquid (B) at the same time.

3,809,646
NOVEL AMMONIOPHENOLATE COMPOUNDS
Thomas William Matches Spence, Warrington, Great Britain, assignor to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed Nov. 30, 1971, Ser. No. 203,415
Claims priority, application Great Britain, Dec. 8, 1970, 58,225/70
Int. Cl. C07c *87/28;* **D06m** *13/46*
U.S. Cl. 252—8.8 **3 Claims**

Novel surface-active compounds able to exist in either cationic or zwitterionic form and to compositions containing them. The compounds are effective as textile softening agents substantive to fabrics at the ordinary pH of fabric rinsing operation and removable from fabrics in a zwitterionic form under succeeding alkaline washing conditions.

3,809,647
GREASE COMPOSITION
Pascal Baudouin, Notre-Dame-de-Gravenchon, France, assignor to Mobil Oil Corporation, New York, N.Y.
No Drawing. Filed Feb. 2, 1973, Ser. No. 329,238
Claims priority, application France, Nov. 7, 1972, 7239361
Int. Cl. C10m *5/12, 5/16, 5/26*
U.S. Cl. 252—28 **10 Claims**

Grease compositions are provided comprising a lubricating vehicle, a grease-forming quantity of a thickening agent and a small amount of a graft copolymer comprising polyethylene modified with a minor amount of an unsaturated aliphatic dicarboxylic acid or its anhydride.

3,809,648
MAGNESIUM PHENOXIDES AND LUBRICANTS CONTAINING THE SAME
Bruce W. Hotten, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.
No Drawing. Filed July 12, 1972, Ser. No. 271,324
Int. Cl. C10m *1/48*
U.S. Cl. 252—32.7 E **10 Claims**

Novel magnesium phenoxides are prepared by a two step process wherein an alkylated phenol is reacted with formaldehyde and a dialkanol amine in a first step to form a Mannich base and in a second step, the Mannich base is neutralized with magnesium methoxide. The magnesium phenoxides impart good hydrolytic stability to zinc dihydrocarbyl dithiophosphate containing lubricants.

3,809,649
LUBRICATING GREASE
Guy Camille Van Doorne, Zellik, Belgium, assignor to Labofina S.A., Brussels, Belgium
No Drawing. Filed Jan. 29, 1973, Ser. No. 327,786
Claims priority, application Belgium, Mar. 15, 1972, 115,079
Int. Cl. C10m *5/22*
U.S. Cl. 252—33.2 **5 Claims**

Lubricating greases comprising 5 to 25% by weight, based on the weight of the greases, of thickening metal soap, 1 to 10% by weight of an anionic emulsion of unoxidized polyethylene having a mean molecular weight higher than 10,000, said emulsion having a polyethylene content ranging from 35 to 60% and a metal sulfonate anionic emulsifier content ranging from 8 to 12% based on the weight of the emulsion, the means size of the polyethylene particles being comprised between 0.02 and 0.5 micron, the rest of the composition being an oleaginous vehicle containing usual additives for lubricating greases.

3,809,650
HIGH DROPPING POINT COMPLEX GREASE
Francis S. Sayles, Rocky Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.
No Drawing. Filed June 16, 1971, Ser. No. 153,852
Int. Cl. C10m *5/14, 5/16, 7/22*
U.S. Cl. 252—42 **7 Claims**

A two-step process for preparing a high temperature grease is provided, in which a thickening agent is first formed, in the first step, by neutralizing a lower alkyl ester of a hydroxy fatty monocarboxylic acid with an excess of a metal base selected from the group consisting of alkali metal bases and alkaline earth metal bases in an oil vehicle. The reaction is conducted at elevated temperature in the range of 300° to 400° F. in a closed system. In the second step, an alkyl ester of an aliphatic dicarboxylic acid is added to the soap-thickened oil composition of step one. The mixture thus formed is heated to a temperature in the range of 350° F. to 450° F. in a closed system.

3,809,651
LUBRICATING OIL CONTAINING AN ALKYLMERCAPTOSUCCINIMIDE
Wheeler C. Crawford and Arthur W. Godfrey, Fishkill, and Robert E. Reid, Glenham, N.Y., assignors to Texaco Inc., New York, N.Y.
No Drawing. Filed Apr. 7, 1971, Ser. No. 132,198
Int. Cl. C10m *1/20, 1/32, 1/38*
U.S. Cl. 252—47.5 **12 Claims**

Lubricating oil composition comprising a major proportion of a mineral lubricating oil and from about 0.005 to 5.0 weight percent of an N-alkylmercaptosuccinimide in which the alkyl radical has from about 12 to 22 carbon atoms and a method of operating an automatic transmission having friction sensitive power transmitting means on a composition comprising a mineral oil and the above-described N-alkylmercaptosuccinimide.

3,809,652
WIDE-TEMPERATURE RANGE ESTER LUBRICANTS
James A. Brennan, Cherry Hill, N.J., assignor to Mobil Oil Corporation
No Drawing. Filed Dec. 15, 1971, Ser. No. 208,463
Int. Cl. C10m *1/26*
U.S. Cl. 252—56 R **1 Claim**

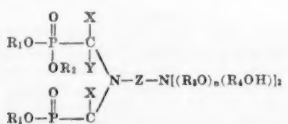
Wide-temperature range ester lubricants are provided by preparing an olefin oligomer in the presence of a BF_3-promoted catalyst and subsequently reacting the olefin oligomer thus formed with a combined acid-BF_3 reactant to obtain the corresponding ester.

3,809,653
INHIBITION OF CORROSIVE ACTION OF FIRE RETARDANTS CONTAINING AQUEOUS AMMONIATED SUPERPHOSPHORIC ACID ON ALUMINUM
James Earl Sansing, Chester, and Joseph Novotny, Hopewell, Va., assignors to Allied Chemical Corporation, Morristown, N.J.
No Drawing. Filed Oct. 13, 1972, Ser. No. 297,528
Int. Cl. C23g *1/06*
U.S. Cl. 252—148 **3 Claims**

Aluminum metal corrosion by an aqueous solution of ammoniated superphosphoric acid is inhibited by incorporating therein effective amounts of (a) urea plus (b) a water soluble 2-mercaptobenzothiazole compound. The aqueous solution, which is useful as a liquid fire retardant, has a pH of 5–8, a nitrogen content of 9–12%, by weight and a total phosphorus content measured as P_2O_5 of 28–39% by weight.

3,809,654
METHODS OF SCALE INHIBITION
Robert S. Mitchell, Webster Groves, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed May 17, 1972, Ser. No. 254,246
Int. Cl. C02b *5/06*
U.S. Cl. 252—180 **26 Claims**

The precipitation of scale-forming salts in an aqueous system is inhibited by adding either stoichiometric or substoichiometric amounts to said system of substituted diamines of the general formula



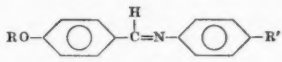
wherein R_1, R_2, R_3, R_4, X, Y and Z are hereinafter defined and n is 0–10.

3,809,655
CORROSION-INHIBITING COMPOSITIONS CONTAINING DIALKYL SULFIDES OR SULFOXIDES
Ralph P. Williams, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed Mar. 29, 1972, Ser. No. 239,317
Int. Cl. C23f *11/16*
U.S. Cl. 252—391 **7 Claims**

Corrosion of metal surfaces in an acidic environment is reduced by the use of corrosion inhibitor compositions comprising a mixture of at least one compound selected from the group consisting of dialkyl sulfides and dialkyl sulfoxides and at least one surface-active agent.

3,809,656
EUTECTIC MIXTURE OF PARA-ALKOXYBENZYLIDENE PARA-N-ALKYL ANILINES
Elwood L. Strebel, Cincinnati, Ohio, assignor to Vari-Light Corporation, Cincinnati, Ohio
No Drawing. Original application Apr. 17, 1969, Ser. No. 817,143, now abandoned. Divided and this application May 10, 1973, Ser. No. 358,838
Int. Cl. C09k *3/00;* **C07c** *119/00*
U.S. Cl. 252—408 **4 Claims**

A new family of organic thermotropic nematic compounds comprising para-substituted alkoxy benzylideneanilines having also para-alkyl substituents on the aniline ring. These compounds have the following structural formula:



wherein

R is a straight or branched chain alkyl group containing 1 to 8 C atoms; and

R′ is a straight chain alkyl group containing 2 to 8 C atoms.

Synthesis involves combining the desired substituted benzaldehyde and substituted aniline in equimolar proportions in anhydrous ethyl alcohol with glacial acetic acid as catalyst. The resulting homologous series of compounds are useful as optically active (i.e. birefringent) materials which have a mesomorphic phase ranging from about 0° to about 70° C., low viscosity at the nematic range, good heat stability, and substantially no color.

3,809,657
CATALYST SYSTEM FOR THE POLYMERIZATION OF OLEFINS
Heinz Mueller-Tamm, Ludwigshafen, Friedrich Urban, Limburgerhof, Hans Frielingsdorf and Johann Nickl, Bad Duerkheim, Guenther Schweier, Ludwigshafen, and Josef Kohnle, Gruenstadt, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft
No Drawing. Filed Aug. 14, 1972, Ser. No. 280,477
Int. Cl. B01j *11/84*
U.S. Cl. 252—429 C **7 Claims**

Catalyst system for the polymerization of olefins consisting of (1) a powdered inorganic carrier and, applied thereto, (2) a Zeigler-type catalyst consisting of (2.1) a component selected from the group consisting of chlorides, oxychlorides and alkoxychlorides of titanium, zirconium and vanadium and (2.2) a component selected from the group consisting of saturated metal alkyls, saturated metal alkoxyalkyls and saturated metal alkyl halides of the metals aluminum, magesium and zinc. The characterizing feature of the catalyst system of the invention is that the carrier (1) has been obtained by heating a substance of the formula

$$Mg[Sn(OH)_6]$$

This catalyst system is very efficient and enables the molecular weight of the polymers to be well regulated by means of hydrogen.

3,809,658
PROCESS FOR THE PREPARATION OF RANEY-METAL CATALYSTS HAVING HIGH ACTIVITY
Zoltán Csürös and József Petró, Budapest, Hungary, assignors to Magyar Tudomanyos Akademia, Budapest, Hungary
No Drawing. Filed Feb. 14, 1972, Ser. No. 226,302
Claims priority, application Hungary, Feb. 26, 1971, MA–2,199
Int. Cl. B01j *11/22*
U.S. Cl. 252—472 **3 Claims**

Raney-catalysts of high activity are prepared by subjecting the alloys to decomposition prior to the conventional leaching operations. In the decomposition step the alloys are mixed with 0.1 to 1.8-fold amounts of an alkaline solution or water at a temperature of 20° C. to 150° C., preferably at 50° C. to 130° C., and the mixture is kept at a constant mass.

3,809,659
AMINE OXIDES
John Fred Gerecht, Somerville, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
No Drawing. Original application Oct. 24, 1967, Ser. No. 677,723, now Patent No. 3,637,682. Divided and this application July 26, 1971, Ser. No. 166,253
Int. Cl. C11d *3/26*
U.S. Cl. 252—542 **4 Claims**

Hydroxy higher alkyl morpholine oxides, and formulations containing the same. The compounds have many beneficial effects in detergent and cosmetic compositions, particularly desirable for application to the skin and for modification of foaming power of detergent compositions.

3,809,660
EPOXIDE RESIN MIXTURES OF HETEROCYCLIC N,N'-DIGLYCIDYL COMPOUNDS
Jurgen Habermeier, Pfeffingen, Daniel Porret, Binningen, and Dieter Baumann, Birsfelden, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Filed Dec. 26, 1972, Ser. No. 318,319
Claims priority, application Switzerland, Dec. 30, 1971, 19,178/71
Int. Cl. C08g *30/02*
U.S. Cl. 260—2 EP **8 Claims**

New epoxide resin mixtures containing a major proportion of higher-molecular N,N'-diglycidyl compounds of cyclic ureide derivatives are obtained if 1 mol of a cyclic ureide, such as hydantoin or dihydrouracil, is reacted with 1.2–3.0 mols of epihalogenohydrin in a known manner.

The new epoxide resin mixtures are suitable for the manufacture of mouldings and coatings having good mechanical properties and display the advantage, as compared to the low molecular N,N'-diglycidyl compounds of cyclic ureides, that on gelling a slighter exothermic effect occurs and on curing a slighter shrinkage occurs.

3,809,661
MOLDING COMPOSITIONS AND METHOD OF MOLDING
Wallace H. Shapero, El Toro, and Albert Cane, Inglewood, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
No Drawing. Original application July 20, 1971, Ser. No. 164,436, now abandoned. Divided and this application Feb. 21, 1973, Ser. No. 334,426
Int. Cl. C08d *7/16;* **C08f** *45/24*
U.S. Cl. 260—5 **8 Claims**

A two part molding composition and method of forming molded rubber and plastic products therefrom which comprises a latex phase to which is added a gellant phase containing glucono-delta-lactone which serves as a means for providing a delayed gelation of the rubber or plastic material in the latex. In the preferred composition, a material is incorporated in the gellant phase which will imbibe the water present in the latex during gelation and at least a portion of the glucono-delta-lactone is disposed within microcapsules permeable to the latex composition whereby a dry molded product can be readily formed utilizing the aforegoing composition.

3,809,662
EMULSION POLYMERIZATION OF DIOLEFINS AND VINYL COMPOUNDS IN THE PRESENCE OF ALGINATE METAL SALTS TO PRODUCE HIGH POLYMER CONCENTRATION, LOW VISCOSITY LATEXES
Yoshihiko Araki, Naotake Sato, and Mikio Takahashi, Yokohama, Japan, assignors to Nippon Oil Company Limited, Tokyo, Japan
No Drawing. Filed Dec. 28, 1971, Ser. No. 213,167
Claims priority, application Japan, Dec. 29, 1970, 46/121,055
Int. Cl. C08f *1/13, 1/66, 45/18*
U.S. Cl. 260—17.4 BB **6 Claims**

A process is disclosed for the production of synthetic rubber latexes by polymerizing aliphatic conjugated diolefins or mixtures of these diolefins and vinyl compounds in an emulsion polymerization system. A latex of high polymer concentration and low viscosity is made available by the process wherein the polymerization of monomers is conducted particularly in the presence of two typical additives, one of which is a water-soluble metal salt and the other is a water-soluble alginate. Importantly, the metal salt is added first and thereafter the alginate is added to the system to secure a high quality latex.

3,809,663
TEXTILE SIZING, WATER AND OIL REPELLENT COMPOSITION
Vincent T. Elkind, Metuchen, Robert T. Hunter, Piscataway, Herman L. Narder, Plainfield, and Joseph A. Yurko, Bayonne, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
No Drawing. Filed Apr. 17, 1967, Ser. No. 631,167
Int. Cl. C08b *25/02*
U.S. Cl. 260—17.4 ST **3 Claims**

A textile sizing or "starching" composition which also imparts water and oil-repellency and dry soil resistance containing a water-soluble starch and a fluoro polymer latex used, preferably, as an aerosol.

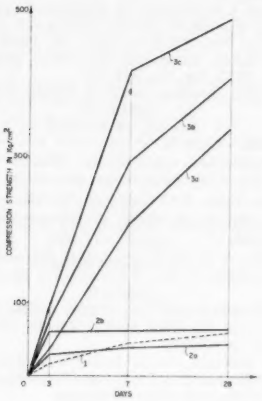
3,809,664
METHOD OF PREPARING STARCH GRAFT POLYMERS
George F. Fanta and Robert C. Burr, Peoria, Ill., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed Aug. 16, 1973, Ser. No. 388,853
Int. Cl. C08b *25/02*
U.S. Cl. 260—17.4 GC **10 Claims**

A wide variety of starch graft polymers are prepared from water-soluble ethylenically unsaturated monomers in admixture with selected amounts of starch and water by adding the admixture to a hot, water-immiscible solvent.

3,809,665
PRODUCT AND PROCESS FOR PREPARING IMPROVED BINDERS CONTAINING SLAG
Pierre Allemand, Lyon, and Christian Hovasse, Decines, France, assignors to Rhone-Progil, Decines, France
Filed June 14, 1972, Ser. No. 262,734
Claims priority, application France, June 14, 1971, 7122556
Int. Cl. C08f *45/04*
U.S. Cl. 260—29.6 S **10 Claims**

Binder compositions containing blast furnace slag and building materials, such as concretes and mortars, derived

from such binders are significantly improved by the addition thereto of a mixture of metal silicate, for example, sodium or potassium silicate and an acrylic copolymer, such as acrylonitrile and acrylic acid copolymer.



3,809,666

COMPOSITIONS OF POLYMERIC MATERIALS

Orest Nicholas Chick, Sarnia, Ontario, and Graham Neville Means, Petrolia, Ontario, Canada, assignors to Polymer Corporation Limited, Sarnia, Ontario, Canada

No Drawing. Continuation-in-part of application Ser. No. 204,762, Dec. 3, 1971. This application Nov. 17, 1972, Ser. No. 307,407

Int. Cl. C08d *7/00*

U.S. Cl. 260—29.7 D 6 Claims

Improved paper coating compositions may be prepared when the latex used therein comprises a blend of a minor proportion by dry weight basis of a latex of a resinous copolymer with a major proportion by dry weight basis of a latex of a polymer consisting of at least four monomer units, namely, a conjugated diolefin and an alkenyl aromatic constituting 90–99.8% by weight of the copolymer and a carboxylic acid comonomer together with acrolein or methacrolein constituting 0.2 to 10 weight percent.

3,809,667

LUBRICATED THERMOPLASTIC RESIN COMPOSITIONS

Antony W. M. Coaker and Elmer E. Cowell, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of abandoned application Ser. No. 721,203, Apr. 15, 1968. This application Jan. 18, 1971, Ser. No. 107,526

Int. Cl. C08f *45/36, 45/38*

U.S. Cl. 260—31.8 R 23 Claims

This disclosure relates to improved thermoplastic resin compositions which contain an acrylic homopolymer or copolymer as a lubricant.

3,809,668

MEANS FOR DESENSITIZING CARBONLESS PAPERS

Dean R. Yarian, Afton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 29, 1971, Ser. No. 110,876

Int. Cl. C08g *51/26;* C08h *17/26;* C09k *3/00*

U.S. Cl. 260—33.4 UR 8 Claims

The disclosed desensitizing agents, when combined with a suitable solvent, can be used to desensitize "carbonless" papers of the DTO/metal type wherein the DTO (dithiooxamide) compound is encapsulated and is released for chemical interaction with a coreactant metal salt by rupture of the capsules. The preferred desensitizing agents are partial esters of ethylenediaminetetraacetic acid, which partial esters are soluble in suitable organic media and form stable, substantially colorless complexes with, for example, nickel salts. Various homologs and analogs of these partial ester derivatives are also operative in the invention, as are certain less preferred compounds, i.e. certain diamines, oximes, and vic.-dimercaptans. The preferred desensitizing agents are also useful for desensitizing "carbonless" papers of the leuco dye/acidic clay tape.

3,809,669

STABLE VINYL CHLORIDE POLYMER STRUCTURES AND METHOD OF PRODUCING THEM

Norman B. Rainer, 2008 Fon du Lac Road, Richmond, Va. 23229

No Drawing. Filed Feb. 11, 1972, Ser. No. 214,423

Int. Cl. C08f *27/02;* C08j *1/14*

U.S. Cl. 260—2.5 R 4 Claims

A polyvinyl chloride (PVC) structure is formed and then dehydrohalogenated to remove a substantial amount of the chlorine content. The dehydrohalogenated product becomes resistant to solvents normally capable of dissolving PVC and also becomes thermally stable and unmeltable at temperatures which would cause PVC to melt. The process is carried out by first heating a vinyl chloride polymer to the point of sintering to form a microporous polymer shaped structure or a relatively non-porous sheet, film, fiber or coating of the vinyl chloride polymer. The shaped structure is then dehydrohalogenated to remove about 10% to 80% of the chlorine content, resulting in a shaped polymeric structure that is both solvent and heat resistant.

3,809,670

POLYAMIDES

Winston Costain and Vincent Matthews, both % ICI Industries, Ltd., Hexagon House, Blackley, Manchester, England

No Drawing. Continuation-in-part of abandoned application Ser. No. 69,460, Sept. 3, 1970. This application July 25, 1972, Ser. No. 274,953

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 N 13 Claims

The aqueous dispersion of titanium dioxide added to polyamide-forming ingredients prior to or during polycondensation to give titanium dioxide delustered polyamides is prepared using alkali metal metasilicate as dispersing agent.

3,809,671

METHOD FOR ANTIBLOCKING HIGH PRESSURE PROCESS POLYETHYLENE FILM

Sohei Okawa and Shuhei Doi, Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

No Drawing. Filed Aug. 10, 1972, Ser. No. 279,319

Claims priority, application Japan, Sept. 14, 1971, 46/71,995

Int. Cl. C08f *45/04*

U.S. Cl. 260—41 R 2 Claims

0.01–2% by weight calcium sulfate having an average particle size of 1–10μ is used as an antiblocking agent for high pressure process ethylene polymer films.

3,809,672

HYDRATES AS CURING AIDS

David A. Stivers, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Aug. 21, 1972, Ser. No. 282,032

Int. Cl. C08f *45/04*

U.S. Cl. 260—42.27 8 Claims

A hydrated compound releasing water at above about 130° C. is included in a curable vinylidene fluoride elasto-

mer formulation to provide desirable curing characteristics.

3,809,673

COMPOSITES AND METHOD FOR MAKING

Dwain M. White, Schenectady, Howard J. Klopfer, Elnora, and Joseph R. McLoughlin, Burnt Hills, N.Y., assignors to General Electric Company

No Drawing. Filed Mar. 20, 1972, Ser. No. 236,191

Int. Cl. C08f *45/28*

U.S. Cl. 260—42.16 **4 Claims**

Carbon fiber prepregs convertible to carbon fiber-carbon matrix composites are provided and a method for making them. Carbon fiber tows are treated with acetylenic organic resin and thereafter carbonized to high strength composites.

3,809,674

BIS(ALKYLSULFONYL)VINYLBENZENES AS UV-ABSORBERS IN POLYMERS

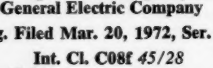
Henry Richmond, Whitehouse Station, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Sept. 6, 1972, Ser. No. 286,635

Int. Cl. C08f *45/58*; C08g *51/58*

U.S. Cl. 260—45.9 R **9 Claims**

Bis(alkylsulfonyl)vinylbenzenes of the formula



wherein R is alkyl of 1 to 12 carbon atoms or cycloalkyl of 5 or 6 carbon atoms and R′ is lower alkyl, lower alkoxy, or hydrogen are useful as ultraviolet light absorbers or light stabilizers for polymers.

3,809,675

PHENYLHYDRAZONE ANTIOXIDANTS FOR POLYOLEFINS

Ralph Holm Hansen, Short Hills, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed Nov. 8, 1972, Ser. No. 304,642

Int. Cl. C07c *109/12*; C08g *51/60*

U.S. Cl. 260—45.9 R **3 Claims**

Oxidative degradation in polymeric hydrocarbon materials such as polyethylene and polypropylene is retarded by incorporation therein of phenylhydrazones.

3,809,676

THERMALLY STABLE FLAME RETARDANT POLYCARBONATE COMPOSITION COMPRISING A POLYCARBONATE AND A STABILIZER

Frank N. Liberti, Mount Vernon, Ind., assignor to General Electric Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 215,105, Jan. 3, 1972. This application Oct. 30, 1972, Ser. No. 302,206

Int. Cl. C08g *39/10, 51/56*

U.S. Cl. 260—45.75 R **10 Claims**

A thermally stable polycarbonate composition consisting of in admixture an aromatic polycarbonate and 0.05 to about 2.0 weight percent of a particular additive. The particular additive employed herein is one that is a mixture of (a) either a barium, cadmium or cerium salt of aliphatic acid of 2 to 16 carbon atoms or a barium or cadmium carbonate and (b) a phosphinite or a phosphonite.

3,809,677

STABILIZATION OF VINYL POLYMERS

Vincent Oakes, St. Helens, and Brian Rodney Iles, Liverpool, England, assignors to Interstab Limited, Liverpool, England

No Drawing. Continuation of abandoned application Ser. No. 193,158, Oct. 27, 1971, which is a division of application Ser. No. 877,857, Nov. 18, 1969, now Patent No. 3,665,024, dated May 23, 1972. This application Nov. 14, 1972, Ser. No. 306,207

Claims priority, application Great Britain, Nov. 22, 1968, 55,523/68

Int. Cl. C08f *45/62*

U.S. Cl. 260—45.75 K **2 Claims**

New organo-tin compounds, suitable for use as stabilizers for vinyl halide resins, are obtained by reacting a dialkyltin oxide, hydroxide, or dihalide with a monoester of a diol or an alkoxy or acyloxy alcohol with a mercapto-acid.

3,809,678

POLYLAURYLLACTAM WITH IMPROVED RESISTANCE TO THE EFFECTS OF HEAT, OXYGEN AND LIGHT

Wolfgang Kriesten, Marl, and Heinz Scholten, Oberhausen, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

No Drawing. Continuation of abandoned application Ser. No. 14,624, Feb. 26, 1970. This application Oct. 19, 1971, Ser. No. 190,635

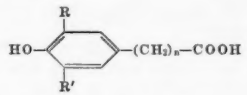
Claims priority, application Germany, Apr. 15, 1959, P 19 19 021.7

Int. Cl. C08f *45/58*; C08g *51/58*

U.S. Cl. 260—45.85 R **6 Claims**

Polylauryllactam having improved resistance to the effects of heat, oxygen and light, prepared by conducting the polymerization in the presence of:

(a) 0.4–1.5 percent by weight of a carboxylic acid of the general formula



wherein

n is an integer of from 0 to 4, and

R and R′ are alkyl groups of 1–5 carbon atoms, and

(b) 0.05–0.3 percent by weight of phosphoric acid and/or phosphorous acid—in each case based on the monomeric laurylactam.

3,809,679

HIGH MOLECULAR WEIGHT LINEAR AROMATIC POLYESTERAMIDES

Günther Lenz and Heinrich Krimm, Krefeld-Bockum, and Hermann Schnell, Krefeld-Urdingen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of abandoned application Ser. No. 27,093, Apr. 9, 1970. This application Feb. 22, 1972, Ser. No. 228,413

Int. Cl. C08g *20/20*

U.S. Cl. 260—47 CZ **8 Claims**

Novel high molecular weight polyesteramides with outstanding thermal stability and mechanical strengths are obtained by polycondensing an aromatic dicarboxylic acid dihalide simultaneously with from 90 to 10 mol percent of an aromatic or araliphatic dihydroxy compound and from 10 to 90 mol percent of an aromatic or araliphatic diamino compound. The polycondensation products can contain chlorine or bromine and ether, sulphide or sulphone groups. The ratio of ester and amide groups in the polycondensate can be varied in limits between about 1:9 and 9:1.

3,809,680

RESINOUS FORMALDEHYDE REACTION PRODUCT OF VULCANIZED-SCRAP-RUBBER PYROLYSIS OIL AND ITS PRODUCTION

Lynn B. Wakefield, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Mar. 20, 1972, Ser. No. 236,438
Int. Cl. C08g 5/00, 7/00
U.S. Cl. 260—51 R 4 Claims

The invention relates to a hard resin prepared by the reaction of formaldehyde and pyrolysis oil obtained by the destructive distillation of scrap rubber vulcanizate, and its preparation. The resins are useful as tackifiers to be used in elastomers.

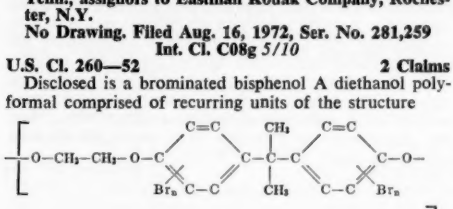
3,809,681

BROMINATED BISPHENOL A DIETHANOL POLYFORMAL

Harry R. Musser and Winston J. Jackson, Jr., Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Aug. 16, 1972, Ser. No. 281,259
Int. Cl. C08g 5/10
U.S. Cl. 260—52 2 Claims

Disclosed is a brominated bisphenol A diethanol polyformal comprised of recurring units of the structure



where n is 1 or 2. This polyformal can be formed into a moldable or fiber-forming composition comprising an admixture of from 50 to 95 weight percent polyester and from 50 to 5 weight percent of the polyformal. Molded objects of the moldable or fiber forming composition exhibit desirable flame retardance as one would expect, and, in addition, exhibit advantageous retention of the flame retardant within the polymer matrix during aging, advantageous lack of discoloration during molding and advantageous lack of discoloration upon exposure to ultraviolet light. Fibers of the moldable or fiber-forming composition exhibit desirable flame retardance as one would expect, and, in addition, exhibit advantageous retention of flame retardancy after dry cleaning and washing, advantageous mechanical properties, advantageous lack of discoloration of the textile fibers during melt spinning, and advantageous lack of discoloration upon exposure to ultraviolet light.

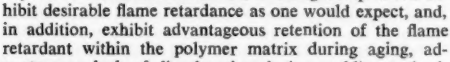
3,809,682

POLYETHER AND POLYTHIOETHER FORMATION IN LACTAM SOLVENTS

Josef Studinka, Zurich, and Rudolf Gabler, Uitikon-Waldegg, Switzerland, assignors to Inventa AG fur Forschung und Patentverwertung, Zurich, Switzerland

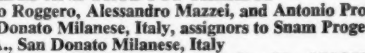
No Drawing. Filed Apr. 11, 1972, Ser. No. 243,083
Claims priority, application Sweden, Apr. 26, 1971, 6,052/71
Int. Cl. C08g 23/09, 25/00
U.S. Cl. 260—61 15 Claims

Polymeric compounds of the formula:



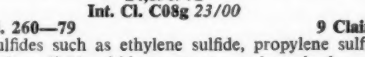
(I)

wherein X_1 and X_2 are independently either oxygen or sulphur, Ar_1 and Ar_2 are the same or different aromatic radicals, n_1 and n_2 are independently of one another the numbers 0–2, and Y_1 and Y_2 are independently of one another a simple bond or a divalent radicals, particularly one of the series —O—, —CONH—, —S—, —SO_2—, —CO—, —CH_2—, —$C(CH_3)_2$—, —N=N—, in which each Ar is attached to the adjacent ring member by two carbon atoms which are not adjacent one another, and is characterized in that at least one compound of the formula:



(II)

is treated with at least one compound of the formula:



(III)

in which Hal represents halogen, particularly chlorine or bromine, and X_1, X_2, Ar_1, Ar_2, n_1, n_2, Y_1 and Y_2 have the significance stated in Formula I, in the presence of the quantity necessary for neutralization of hydrogen-halide in particular 1–20% by weight excess calculated on the starting material of an inorganic or organic base as acid acceptor, in a solvent of the formula:

(IV)

in which A is an alkyl radical with 1–4 carbon atoms and m represents the numbers 5–11, and in which the hydrogen atoms of the methylene groups can be wholly or partially substituted by alkyl groups with 1–4 carbon atoms at atmospheric pressure at a temperature of 180–200° C.

3,809,683

PREPARATION OF POLYMERS

Edward Emil Schmitt, Norwalk, Conn., and Rocco Albert Polistina, Port Chester, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Feb. 16, 1973, Ser. No. 333,432
Int. Cl. C08g 33/04
U.S. Cl. 260—78.4 N 7 Claims

Biodegradable aminotriazole polymers which are produced from dihydrazides are disclosed.

3,809,684

PROCESS FOR THE PRODUCTION OF HOMOPOLYMERS AND CO-POLYMERS OF EPISULPHIDES AND PRODUCT THEREOF

Arnaldo Roggero, Alessandro Mazzei, and Antonio Proni, San Donato Milanese, Italy, assignors to Snam Progetti, S.p.A., San Donato Milanese, Italy

No Drawing. Filed May 24, 1972, Ser. No. 256,250
Claims priority, application Italy, May 24, 1971, 24,896/71
Int. Cl. C08g 23/00
U.S. Cl. 260—79 9 Claims

Episulfides such as ethylene sulfide, propylene sulfide and allyloxy-(2,3)-epithiopropane are polymerized or copolymerized by bringing one or more of those monomers into contact with a catalytic quantity of a hydride of an alkaline earth metal or the product of the reaction of an alkali metal, an alkaline earth metal, a hydride or an alkyl derivative of one of those metals, with a dialkyl, dicycloalkyl or diaryl sulfoxide or sulfone in a polar solvent, at a temperature in the range of —20° to 20° C.

3,809,685

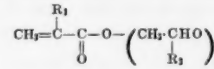
CROSS-LINKED ACRYLONITRILE POLYMER FIBERS

Hideo Sato and Yoshiharu Sugaya, Fujishi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha

No Drawing. Filed Sept. 23, 1971, Ser. No. 183,219
Claims priority, application Japan, Sept. 26, 1970, 45/83,894
Int. Cl. C08f 15/38
U.S. Cl. 260—80.71 2 Claims

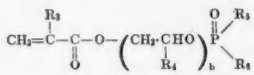
Cross-linked acrylonitrile polymer fibers having an excellent heat resistance can be obtained from a linear co-

polymer comprising acrylonitrile, a comonomer represented by the general formula of



(I)

wherein R_1 is a hydrogen atom, a halogen atom or a specified organic group; R_2 is a hydrogen atom or a specified organic group, and R_2 in numbers of a can be same or different; and a is a positive integer of 1–100, and a comonomer represented by the general formula of



(II)

wherein R_3 has the same meaning as R_1; R_4 has the same meaning as R_2, except that a is changed to b; R_5 and R_6 are hydrogen atoms, halogen atoms, specified organic groups, hydroxyl groups or basic salts thereof; and b is a positive integer of 1–105, and as an optional comonomer, an ethylenically unsaturated compound copolymerizable with acrylonitrile.

A blend of said copolymer with polyacrylonitrile or other copolymers of acrylonitrile can be also used for preparing said fibers. Further, said copolymer can be used for producing cross-linked acrylonitrile composite fibers having an excellent heat resistance, as their one component.

3,809,686

TRANSPARENT MEDIA CAPABLE OF PHOTO-INDUCED REFRACTIVE INDEX CHANGES AND THEIR APPLICATION TO LIGHT GUIDES AND THE LIKE

Edwin Arthur Chandross, Berkeley Heights, Richard Lynn Fork, Holmdel, Ivan Paul Kaminow, New Shrewsbury, and Walter John Tomlinson III, Holmdel, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Original application Mar. 19, 1970, Ser. No. 21,102, now Patent No. 3,689,264, dated Mar. 19, 1970. Divided and this application Mar. 1, 1972, Ser. No. 230,714

Int. Cl. C08f *3/68*; G03c *5/00*

U.S. Cl. 260—89.5 A **3 Claims**

There are disclosed a variety of methods for producing light guides in suitably sensitized samples upon irradiation with focused ultraviolet light and subsequent aging. These methods are based upon the discovery that ultraviolet radiation from a mercury arc at 3650 A. or from an ultraviolet helium-cadmium ion laser at 3250 A. produces readily observable irreversible index of refraction changes in poly(methyl methacrylate) polymerized at low temperatures of around 40–50 degrees centigrade. Upon subsequent aging, the amount and gradient of the index change substantially increase.

3,809,687

HYDROGENATION OF POLYSTYRENE

Birt Allison, Jr., Calvin L. Daniels, and James H. Moss, Jr., Big Spring, Tex., assignors to Cosden Oil & Chemical Company, Big Spring, Tex.

No Drawing. Filed Dec. 20, 1971, Ser. No. 210,146

Int. Cl. C08f *27/24*

U.S. Cl. 260—93.5 A **8 Claims**

A process for the hydrogenation of ethylenically unsaturated aromatic polymeric compositions, which process comprises introducing said polymeric compositions dispersed in a suitable solvent therefor concurrently with hydrogen into a contact with a noble metal containing catalyst at a temperature of 100 to 350° C. and at an LHSV of 0.1 to 10.

3,809,688

PROCESS FOR THE POLYMERIZATION OF AN OLEFINE AT HIGH PRESSURE IN TUBULAR REACTORS

Anacleto Clementi, Saronno, and Roberto Battini, San Donato Milanese, Italy, assignors to Snam Progetti, S.p.A., San Donato Milanese, Italy

Filed Feb. 3, 1972, Ser. No. 223,105

Claims priority, application Italy, Feb. 3, 1971, 20,110/71

Int. Cl. C08f *1/60, 3/04, 1/88*

U.S. Cl. 260—94.9 R **4 Claims**

Ethylene is polymerized under a pressure of 1000 to 5000 atmospheres in the presence of catalyst and polymerization promoter in a tubular reactor having a preheating zone and a reaction zone from which a mixture including polyethylene and unreacted ethylene is continuously fed to an expansion tube whose internal diameter is substantially less than the internal diameter of the reaction zone tube and where the pressure and temperature of the mixture from the reaction zone is substantially reduced, then the polyethylene is separated from unreacted ethylene which is recycled.

ERRATA

For Classes 260—121 and 260—46 see:
Patents Nos. 3,809,782 and 3,809,783

3,809,689

SYNTHETIC POLYOXIN TYPE NUCLEOSIDES AND METHODS OF PREPARING

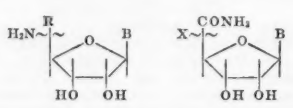
Nandyelath Damodaran, Poona, India, and John Moffatt, Los Altos, and Gordon Jones and George Howarth, Palo Alto, Calif., assignors to Syntex (U.S.A.) Inc.

No Drawing. Filed Feb. 25, 1971, Ser. No. 119,019

Int. Cl. C07d *51/52, 51/54*

U.S. Cl. 260—211.5 R **30 Claims**

Novel polyoxin type nucleosides and methods of preparing such compounds and also a generic process for converting nucleoside-5'-aldehydes or 5'-aldehyde hydrates to the corresponding hexofuranosyluronamide nucleosides. The novel polyoxin type nucleosides can be generally represented by the following formula



wherein

R is the group $—CH_2OH$, or —COOH; B is selected from pyrimidine or purine bases; X is the group $—NH_2$ or —OH and the wavy line indicates both the 5'-allo and -talo epimers.

The generic process is characterized by the step of treating a nucleoside-5'-aldehyde or 5'-aldehyde hydrate with an alkali metal cyanide salt and hydrogen peroxide. The compounds exhibit antibiotic activity, antifungal activity and general antimetabolite activity and are useful as antifungal agents such as, for example, agricultural fungicides, and also as sterilization agents.

3,809,690

18-(ALKYL-ACYLAMINO)-14β,16β,20-TRIHYDROXY STEROIDS AND METHODS FOR THEIR PREPARATION

Ulrich Kerb, Rudolf Wiechert, Ulrich Eder, and Hans-Detlef Berndt, Berlin, Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Mar. 20, 1972, Ser. No. 236,241
Claims priority, application Germany, Mar. 23, 1971, P 21 14 646.3; Jan. 14, 1972, P 22 02 409.5; Jan. 27, 1972, P 22 04 359.0
Int. Cl. C07c *169/20, 173/00*
U.S. Cl. 260—239.5 22 Claims

A new class of 18-(alkyl-acylamino)-14β,16β,20-trihydroxy steroids is described. These compounds are useful as cardiac agents, diuretics and as intermediates in the preparation of other pharmaceutically active compounds.

3,809,691

NOVEL CYANINE DYES WITH FUSED IMIDAZOLO NUCLEI

James W. Carpenter, John D. Mee, and Donald W. Heseltine, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original application Oct. 23, 1967, Ser. No. 677,058, now Patent No. 3,615,639, dated Oct. 26, 1971. Divided and this application Oct. 7, 1970, Ser. No. 78,909
Int. Cl. C09b *23/10*
U.S. Cl. 260—240 E 12 Claims

Novel polymethine dyes are provided which feature an imidazole ring joined at the carbon atom in the 5-position of the imidazole ring to a dimethine linkage, the imidazole ring having fused to the [a] side thereof the non-metallic atoms required to complete at least one fused ring, and a second desensitizing nucleus joined at a carbon thereof to the dimethine linkage. The invention also provides novel photographic silver halide emulsions, including direct positive emulsions containing the dyes of the invention.

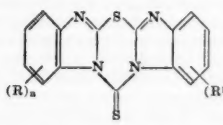
3,809,692

[1,3,5]-THIADIAZINOBISBENZIMIDAZOLES

Rudiger D. Haugwitz, Highland Park, and Venkatachala L. Narayanan, Hightstown, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed July 16, 1971, Ser. No. 163,459
Int. Cl. C07d *93/28*
U.S. Cl. 260—243 R 4 Claims

[1,3,5]-thiadiazinobisbenzimidazoles are provided having the structure



and which are useful as anthelmintic agents.

3,809,693

PROCESS FOR THE TRIMERIZATION OF NITRILES

Gordon H. Miller, Richmond, Va., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed Sept. 1, 1971, Ser. No. 177,093
Int. Cl. C07d *55/50*
U.S. Cl. 260—248 CS 6 Claims

Aromatic nitriles, such as terephthalonitrile, isophthalonitrile, benzonitrile, etc., are trimerized to the corresponding 1,3,5-triazine by heating the nitrile in the presence of a catalyst, such as a metal chloride, and afterward the unconverted nitrile is removed overhead from the triazine product by sublimation.

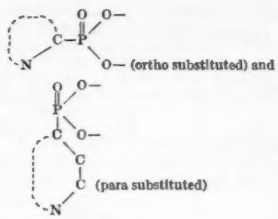
3,809,694

DIHYDROPHENANTHRIDINE PHOSPHONATES

Derek Redmore, Ballwin, Mo., assignor to Petrolite Corporation, Wilmington, Del.

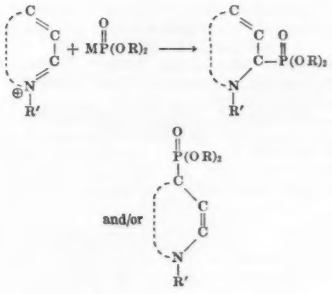
No Drawing. Original application May 31, 1968, Ser. No. 733,328, now abandoned. Divided and this application Jan. 18, 1971, Ser. No. 107,558
Int. Cl. C07d *39/02*
U.S. Cl. 260—286 A 2 Claims

Nitrogen-heterocyclic phosphonates wherein the phosphonate group is ortho- or para- to the nitrogen heterocyclic group, where the compounds are characterized as follows:



wherein the dotted line represents a cyclic structure which cyclic structure may be the sole cyclic structure, or may be attached to other cyclic groups.

These nitrogen heterocyclic phosphonates are prepared by reacting an aromatic nitrogen heterocyclic compound, wherein the nitrogen atom is in the form of a salt or a quaternary, with a phosphite salt, preferably in the form of esters of the phosphite as exemplified by the following equation:



3,809,695

2,6-DICHLORO-3-NITRO-PYRIDINE

Günter Steinmetz and Kurt Thiele, Frankfurt, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Filed Apr. 8, 1968, Ser. No. 719,711
Claims priority, application Germany, Apr. 19, 1967, D 52,843
Int. Cl. C07d *31/26*
U.S. Cl. 260—290 HL 4 Claims

2,6-dichloro-3-nitro-pyridine and its production by reaction of 2,6-dichloropyridine with a mixture of concentrated sulfuric acid and smoking nitric acid under reflux. The 2,6-dichloro-3-nitro-pyridine is useful as a herbicide and also in view of the selective reactivity of the chlorine substituent, it is useful as an intermediate in the preparation of other useful products, such as compounds having analgesic action.

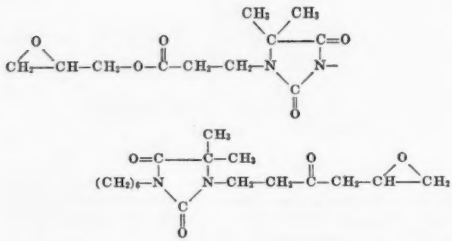
3,809,696
DIGLYCIDYL COMPOUNDS CONTAINING TWO N-HETEROCYCLIC RINGS

Daniel Porret, Binningen, and Willy Fatzer, Bottmingen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Nov. 9, 1971, Ser. No. 197,145
Claims priority, application Switzerland, Nov. 18, 1970, 17,026/70
Int. Cl. C07d *49/32, 51/30*
U.S. Cl. 260—256.4 C 6 Claims

Diglycidyl esters are produced by the reaction, in a known manner, of dicarboxylic acids of binuclear N-heterocyclic compounds, e.g. 1,6 - bis[1' - (β - carboxyethyl) - 5',5' - dimethylhydantoinyl - 3']-hexane, with epihalogenhydrin, e.g. epichlorohydrin.

Example: The new compound



The new diglycidyl esters can be easily cured with all known epoxide resin curing agents, and are suitable for the production of coatings and moulded shapes having good mechanical properties.

3,809,697
1,4-BIS-ACYLPIPERAZINES

Tellis Alexander Martin and William Timmey Comer, Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed Oct. 7, 1971, Ser. No. 187,257
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 C 5 Claims

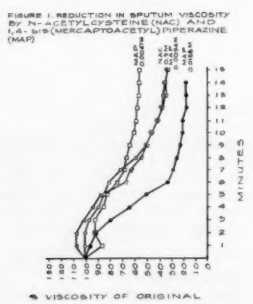


FIGURE I. REDUCTION IN SPUTUM VISCOSITY BY N-ACETYLCYSTEINE (NAC) AND 1,4-bis(MERCAPTOACETYL) PIPERAZINE (MAP)
MINUTES
% VISCOSITY OF ORIGINAL

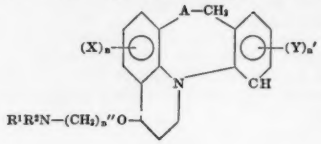
1,4-bis-acylpiperazines in which the acyl group is mercaptoacetyl or α-substituted mercaptoacetyl are potent mucolytic agents which are not only effective topically but also systemically on oral or parenteral administration to animals.

3,809,698
3-(AMINOALKOXY)-2,3-DIHYDROQUINOBENZOXA OR THIA) ZEPINE DERIVATIVES

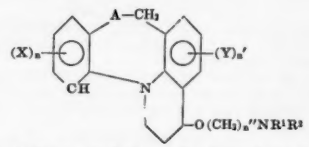
Harry L. Yale, New Brunswick, and Ramesh B. Petigara, Somerset, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Jan. 31, 1972, Ser. No. 222,286
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 PC 4 Claims

3(-aminoalkoxy)-2,3-dihydroquinobenzoxa (or thia) zepine derivatives are provided having the structures



or



wherein A is O or S and X, Y, R^1, R^2, n, n' and n'' are as defined hereinafter. These compounds are useful as anti-inflammatory agents, and central nervous system stimulants or depressants depending on dosage.

3,809,699
PROCESS FOR PRODUCING 6-AMINO-PENICILLANIC ACID

Toshiyasu Ishimaru, Suita, Japan, assignor to President of Osaka University, Osaka, Japan

No Drawing. Filed Dec. 16, 1970, Ser. No. 98,907
Claims priority, application Japan, Dec. 26, 1969, 44/1,002; Feb. 2, 1970, 45/9,139; Feb. 13, 1970, 45/12,378
Int. Cl. C07d *91/14, 99/16*
U.S. Cl. 260—306.7 15 Claims

6-aminopenicillanic acid is prepared, with advantage in industrial viewpoint, by (A) reacting 6-acylaminopenicillanic acid or a salt thereof with a halogenated compound such as trihalide of phosphorus, tetrahalide of silicon, phosphorous pentahalide, phosgene or thiophosgene, in the presence of an acid-binding reagent for the purpose of to protect the carboxyl group of the 6-acylamidopenicillanic acid by forming a mixed acid anhydride, (B) converting the resultant mixed acid anhydride into the corresponding imino halide by reacting it with an imino halide-forming reagent such as phosphorus oxychloride, phosphorus pentachloride, phosphorous tribromide, phosgene, oxalyl chloride or protocatechyl phosphorous trichloride to form the corresponding imino halide, (C) converting the resultant imino halide into the corresponding imino-ether by reacting it with an alcohol and finally (D) hydrolyzing the imino ether and removing the protected group of the carboxyl group to form 6-aminopenicillanic acid.

3,809,700
CERTAIN 5,6-DIOXOPYRROLO[2,1-b]THIAZOLES

Henry Rapoport, Berkeley, Calif., assignor to The Regents of The University of California, Berkeley, Calif.

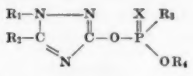
No Drawing. Original application June 22, 1970, Ser. No. 48,550, now Patent No. 3,714,156. Divided and this application Sept. 15, 1972, Ser. No. 289,382
Int. Cl. C07d *99/14*
U.S. Cl. 260—306.7 3 Claims

A process for preparing lactams, particularly 1-azabicyclo[4.2.0]octanes, 1-azabicyclo[3.2.0]heptanes, 4-thio-

1-azabicyclo[3.2.0]heptanes and 5 - thia - 1 - azabicyclo [4.2.0]octenes, which comprises subjecting a cyclic α-keto amide to an oxidizing agent to form a carboxyl substituted lactam structure. The oxidant is preferably periodate, in an aqueous solution, at pH 5–9 and room temperature. The novel products obtained from the process are useful intermediates in the preparation of antimicrobial agents. The cyclic α-ketoamide starting materials are also novel.

3,809,701
TRIAZOLYLPHOSPHONIC AND -PHOSPHORIC ESTERS
Dag Dawes, Pratteln, and Beat Boehner, Binningen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Filed Jan. 12, 1972, Ser. No. 217,251
Claims priority, application Switzerland, Jan. 19, 1971, 774/71; Dec. 7, 1971, 17,788/71
Int. Cl. C07d *55/06*
U.S. Cl. 260—308 R **17 Claims**

Triazolylphosphonic and -phosphoric esters of the formula



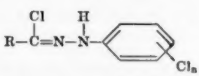
wherein R_1 and R_4 represent similar or different radicals such as hydrogen, alkyl, unsubstituted or substituted phenyl or cycloalkyl, R_2 represents the groups —$COOR_1$, —CO—$N(R_4)(R_5)$ or —CN, R_3 represents alkyl, alkoxy or phenyl, R_5 represents hydrogen or alkyl and X represents oxygen or sulphur their manufacture and their use in pest control are disclosed.

3,809,702
N,N'-SUBSTITUTED THIOOXAMIDE, S-OXIDES
Wendell Gary Phillips, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Nov. 17, 1971, Ser. No. 199,753
Int. Cl. C07d *27/04, 27/74*
U.S. Cl. 260—326.4 **9 Claims**

N,N'-substituted thiooxamide, S-oxides are prepared from substituted carbamoyl sulfines by reaction with a primary or secondary amine. The compounds of this invention are pesticidally active and particularly useful as selective herbicides.

3,809,703
THIOPHENECARBONYL CHLORIDE PHENYLHYDRAZONES
Girts Kaugars, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Original application Oct. 5, 1970, Ser. No. 78,166, now Patent No. 3,699,111, dated Oct. 17, 1972. Divided and this application Aug. 31, 1972, Ser. No. 285,440
Int. Cl. A61k *27/00;* **C07d** *63/12*
U.S. Cl. 260—332.5 **2 Claims**

This invention relates to novel heterocyclic acid chloride phenylhydrazones embraced by the formula



(I)

wherein R is a radical selected from the group consisting of furyl, thienyl and pyridyl, each of which has from zero through three substituents selected from the group consisting of alkyl, halo and nitro, and n is an integer of from zero through three. These compounds are primarily useful as insecticides and miticides and also as herbicides, antiinflammatories and anthelmintics.

3,809,704
PROCESS FOR THE PREPARATION OF 3-(3'-LOWER CARBOALKOXY - 4' - HYDROXY NAPHTHALIDENE)NAPHTHALIDE
Michael H. Feingold, Pinehurst, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
No Drawing. Filed Dec. 11, 1972, Ser. No. 313,963
Int. Cl. C07d *7/10*
U.S. Cl. 260—343.2 R **8 Claims**

This invention relates to the synthesis of 3-(3'-lower carboalkoxy - 4' - oxo - 1' - naphthylidene)naphthalides by reacting a 3 - halo - 3 - (3' - lower carboalkoxy-4'-hydroxy - 1' - naphthyl)naphthalide with an acid acceptor.

3,809,705
PROCESS FOR THE DEACYLATION OF AROYL-AMINO-DIANTHRIMIDES
Arnold Wick, Therwil, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland
No Drawing. Filed July 15, 1971, Ser. No. 165,761
Claims priority, application Switzerland, July 17, 1970, 10,934/70
Int. Cl. C09b *1/48*
U.S. Cl. 260—367 **4 Claims**

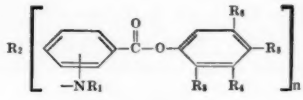
A process for the manufacture of amino-dianthrimides, wherein aroylamino-dianthrimides are acted upon by sulphuric acid in the presence of boric acid.

3,809,706
N-SUBSTITUTED FATTY ACID AMIDE LUBRICANTS
Frank C. Magne, Robert R. Mod, and Gene Sumrell, New Orleans, La., and Winfred E. Parker, Philadelphia, Pa., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Original application Aug. 31, 1971, Ser. No. 176,734, now Patent No. 3,746,644. Divided and this application Apr. 6, 1973, Ser. No. 348,802
Int. Cl. C07f *9/02, 9/10*
U.S. Cl. 260—403 **1 Claim**

This invention relates to N-acylmorpholines and N-mono and N,N-disubstituted fatty acid amides and to similar derivatives of epithioamides which are useful as base and extreme pressure lubricants and additives.

3,809,707
ULTRAVIOLET LIGHT STABILIZERS
Reginoldus Havinga, Schalkhaar, and Pieter Dirk Swaters, Lochem, Netherlands, assignors to Koninklijke Industrieele Maatschappij Noury & Van Der Lande N.V., Deventer, Netherlands
No Drawing. Filed Aug. 27, 1970, Ser. No. 67,588
Claims priority, application Netherlands, Aug. 28, 1969, 6913138
Int. Cl. C11c *3/00*
U.S. Cl. 260—404 **39 Claims**

Ultraviolet light stabilized polymers having incorporated therein a stabilizing amount of a compound having the general formula:



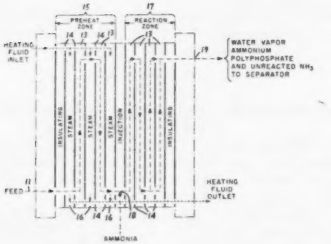
wherein R_1 represents a hydrogen atom, an alkyl group or an acetyl group, R_3, R_4, R_5 and R_6 are the same or different and each represents a hydrogen atom, a halogen atom, a hydroxyl group, an alkyl group or an alkoxy group having up to 12 carbon atoms or an aryl group, n being 1 or 2 and, when $n=1$, R_2 is a hydrogen atom, an alkyl group, an acyl group having up to 20 carbon atoms, a substituted or non-substituted aroyl group, a phenoxy carbonyl group or a substituted or non-substituted benzene

sulfonyl group and, when $n=2$, R_2 is a sulfonyl, carbonyl or dioxaloyl group or a group having the formula

$$-\overset{\overset{O}{\|}}{C}-Z-\overset{\overset{O}{\|}}{C}-$$

where Z represents a phenylene group or an alkylidene group having up to 12 carbon atoms. Many of the compounds within this general formula are novel per se, and accordingly are claimed as such.

3,809,708
CONTROLLED REACTION SYSTEMS
Paul S. Minor, Fort Lauderdale, Fla., assignor to Parkson Corporation, Fort Lauderdale, Fla.
Continuation-in-part of application Ser. No. 9,590, Feb. 9, 1970. This application May 28, 1971, Ser. No. 148,096
Int. Cl. C05b *11/04;* **C11c** *3/12*
U.S. Cl. 260—409 **11 Claims**



In the particular embodiments of the invention described herein, gas-liquid reactions are carried out by continuously injecting the normally gaseous reactant into a confined stream of the liquid reactant and passing the gas-liquid mixture through a confined tortuous flow path so as to induce turbulence in the mixture. Typical reactions are ammonia-phosphoric acid reactions and chlorination and hydrogenation reactions.

3,809,709
INTERESTERIFICATION OF GLYCERIDES IN THE PRESENCE OF AN ALIPHATIC KETONE
Johannes Jacobus Muller, Rotterdam, and Theodorus Johannes Kock, Heenvliet, Netherlands, assignors to Lever Brothers Company, New York, N.Y.
No Drawing. Filed Dec. 2, 1971, Ser. No. 204,302
Claims priority, application Great Britain, Dec. 4, 1970, 57,648/70
Int. Cl. C11c *3/10*
U.S. Cl. 260—410.7 **9 Claims**

Random and direct interesterification processes of glycerides can be accelerated by effecting such processes at temperatures from —30° to 150° C. in the presence of both an alkali metal or its catalytically active derivative and an aliphatic ketone containing 3 to 32 carbon atoms.

3,809,710
ESTERS OF 9-OXA-2,4-ALKADIENOIC ACIDS
Vaclav Jarolim, Karel Slama, and Frantisek Sorm, Prague, Czechoslovakia, assignors to Ceskoslovenska Akademie Ved., Prague, Czechoslovakia
No Drawing. Filed July 3, 1972, Ser. No. 268,427
Claims priority, application Czechoslovakia, July 19, 1971, 5,304/71
Int. Cl. A01n *9/24;* **C07c** *69/66*
U.S. Cl. 260—410.9 R **10 Claims**

Novel esters of 9-oxa-2,4-alkadienoic acids, intermediates therefor, synthesis thereof, and the control of insects.

3,809,711
PROCESS FOR SYNTHESIZING SPECIFIC COMPLETE MIXED POLYOL ESTERS
Jerry Joseph Yetter, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed Apr. 7, 1972, Ser. No. 242,139
Int. Cl. C07c *67/00*
U.S. Cl. 260—410.7 **20 Claims**

Reacting a partial polyol monocarboxylic acid ester with an acidic anhydride in the presence of a perfluoroalkyl sulfonic acid catalyst to produce specific complete mixed polyol esters, especially synthetic cocoa butter, with substantially no ester group rearrangement.

3,809,712
PROCESS FOR SYNTHESIZING SPECIFIC COMPLETE MIXED POLYOL ESTERS
Jerry Joseph Yetter, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed Aug. 10, 1972, Ser. No. 279,577
Int. Cl. C07c *67/00*
U.S. Cl. 260—410.7 **19 Claims**

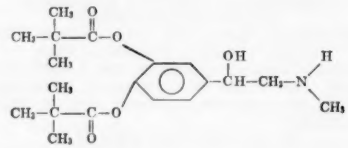
Reacting a partial polyol monocarboxylic acid ester with an acidic anhydride in the presence of a catalytic amount of hydrogen bromide to produce specific complete mixed polyol esters, especially confectioner's hard butter.

3,809,713
PROCESS FOR PRODUCING SILAZANE COMPOUNDS
Robert Paul Boersma, Frank Dominic M[illegible]dicino, and George Michael Omietanski, Marietta, Onio, assignors to Union Carbide Corporation, New York, N.Y.
No Drawing. Filed Mar. 1, 1973, Ser. No. 337,110
Int. Cl. C07f *7/10, 7/18*
U.S. Cl. 260—448.2 E **11 Claims**

Process for producing silazane compounds by reacting a halosilane with ammonia in the presence of alkylene diamine.

3,809,714
NOVEL ESTER OF [(METHYLAMINO)METHYL] BENZYL ALCOHOL
Anwar Hussain and James E. Truelove, Lawrence, Kans., assignors to INTERx Research Corporation, Lawrence, Kans.
No Drawing. Filed Aug. 31, 1972, Ser. No. 285,235
Int. Cl. C07c *69/18*
U.S. Cl. 260—479 R **3 Claims**

A novel ester of the general formula:



and the pharmaceutically acceptable acid addition salts thereof. The compound of the formula is useful as an antiglaucoma and broncholytic agent.

3,809,715
PROCESS FOR THE PRODUCTION OF ALPHA-NAPHTHYL ESTERS
Jacques Daniel Victor Hanotier and Monique Josephe Simone Hanotier, Brussels, Belgium, assignors to Labofina S.A., Brussels, Belgium
No Drawing. Filed Nov. 13, 1972, Ser. No. 306,041
Int. Cl. C07c *69/14, 39/14, 69/24*
U.S. Cl. 260—479 R **7 Claims**

A process for the production of alpha-naphthyl esters of aliphatic carboxylic acids having from 1 to 4 carbon

atoms which comprises subjecting naphthalene to oxidation in the presence of said aliphatic carboxylic acids and a cobalt salt capable of forming cobaltic ions in a ratio such that $2x-A$ is between 0.2 and 1.5, x and A being respectively the molarity of the cobaltic ions and of said cobalt salt in the reaction mixture, at a temperature from 20 to 150° C. and in the absence of oxygen.

3,809,716

PROCESS FOR THE PRODUCTION OF 1,1,2-TRIACETOXYETHANE

Klaus Udluft, Constance, Wolfgang Weigert, Offenbach, Heribert Offermanns, Grossauheim, and Hans Wagner, Constance, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Filed Aug. 13, 1973, Ser. No. 387,617
Claims priority, application Germany, Aug. 10, 1972, P 22 39 278.5
Int. Cl. C07c *67/00*
U.S. Cl. 260—491 **5 Claims**

1,1,2 - triacetoxyethane is produced by reacting monochloroacetaldehyde with acetic anhydride and a salt of acetic acid.

3,809,717

SULFONATED PHENOL ETHERS

Manfred Daeuble, Frankenthal, and Norbert Greif and Rolf Fikentscher, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Mar. 29, 1972, Ser. No. 239,382
Int. Cl. C07c *143/42*
U.S. Cl. 260—512 R **5 Claims**

Sulfonated phenol ethers and a process for their production by reaction of sulfonated phenols with alkylene oxides.

3,809,718

CROTONAMIDE DERIVATIVES SUITABLE AS AGENTS FOR CONTROL OF PLANT DISEASES

Ove Henning Mattsson, Taby, and Britt-Marie Elisabeth Bertilsson, Stockholm, Sweden, assignors to KemaNord AB, Stockholm, Sweden

No Drawing. Filed July 6, 1971, Ser. No. 160,196
Claims priority, application Sweden, July 7, 1970, 9,403/70
Int. Cl. C07c *103/60*
U.S. Cl. 260—562 S **3 Claims**

This invention pertains to new chemical compounds that are suitable agents for the control of plant diseases carried by certain seed carrying bacteria. The new compounds are certain crotonamide derivatives.

3,809,719

ORGANIC COMPOSITIONS CONTAINING AMINOGUANIDINE ANTIOXIDANTS

Harry J. Andress, Jr., Pitman, N.J., assignor to Mobil Oil Corporation

No Drawing. Original application May 18, 1970, Ser. No. 38,500, now Patent No. 3,655,560, dated Apr. 11, 1972. Divided and this application May 19, 1971, Ser. No. 145,012
Int. Cl. C07c *129/12*
U.S. Cl. 260—564 F **2 Claims**

Organic compositions are provided containing, as improving agents, compounds selected from the group consisting of ketimines of aminoguanidine, aldimines of ketimines of aminoguanidine and aldimines of amides of aminoguanidines. These compounds act as antioxidants and metal deactivators for fuel oils, lubricating oils and greases.

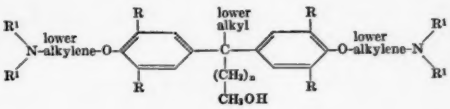
3,809,720

BIS/PARA(AMINO-LOWERALKYLENEOXY) PHENYL/ALKANOLS AND THE SALTS THEREOF

Josef Fried, Chicago, Ill., and Edward J. Pribyl, Metuchen, and John Krapcho, Somerset, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 793,612, Jan. 23, 1969, which is a continuation-in-part of application Ser. No. 566,245, July 19, 1966, which in turn is a continuation-in-part of application Ser. No. 288,630, June 18, 1963, all now abandoned. This application Sept. 30, 1970, Ser. No. 77,037
Int. Cl. C07c *93/06*
U.S. Cl. 260—570 R **5 Claims**

This application relates to alcohols of the general formula



and to acid addition salts thereof. These substances inhibit cholesterol biosynthesis and aid in the regulation of cholesterol in the blood.

3,809,721

SUBSTITUTED 2-AMINOMETHYL-4,6-DISUBSTITUTED PHENOLS

Everett M. Schultz, Ambler, and Edward J. Cragoe, Jr., Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Dec. 23, 1970, Ser. No. 101,120
Int. Cl. C07c *87/28*
U.S. Cl. 260—570.9 **5 Claims**

2-aminomethyl-4,6-disubstituted phenols and the acid addition salts thereof, wherein the benzene nucleus may be optionally substituted by one or two additional nuclear substituents; which products are useful as diuretics and saluretics. The products may be prepared by treating a nuclear hydroxy (or lower alkoxy) substituted N-(substituted benzyl)carboxamide with an aqueous solution in the presence of an acid or base.

3,809,722

PROCESS FOR PRODUCING ALKOXY ALDEHYDES

Albert Bouniot, Melle, France, assignor to Melle-Bezons, Melle, France

Filed Dec. 20, 1968, Ser. No. 785,575
Claims priority, application France, Jan. 3, 1968, 134,729
Int. Cl. C07c *47/02*
U.S. Cl. 260—602 **16 Claims**

The process for producing a β-alkoxy aldehyde by condensing a lower α,β-olefinic aliphatic aldehyde with a lower alkanol in the presence of a volatile tertiary amine catalyst.

3,809,723

STABILIZATION OF POLYOXYALKYLENE POLYETHERS

Hsien Ying Niu, Southgate, and Eugene A. Weipert, Allen Park, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Filed June 3, 1971, Ser. No. 149,776
Int. Cl. C07c *41/12*
U.S. Cl. 260—611.5 **2 Claims**

Nonionic surfactants are prepared by oxyalkylating an initiator in the presence of an alkaline catalyst which must

then be removed or chemically inactivated in order to prevent deterioration of the nonionic surfactant as evidenced by the development of color. It has unexpectedly been found that the alkaline degradation may be prevented by diluting the catalyst with from about 5 to about 50 times its weight of water.

3,809,724

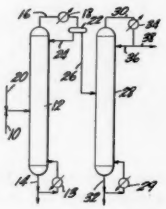
PREPARATION AND RECOVERY OF ALKYLENE GLYCOLS

Richard L. Golden, Oradell, N.J., assignor to Halcon International, Inc.

Filed Sept. 8, 1971, Ser. No. 178,587

Int. Cl. C07c *29/28*

U.S. Cl. 260—635 R **13 Claims**



Ethylene glycol or 1,2-propylene glycol contained in mixtures with lower carboxylate esters of the glycol is recovered by azeotropic distillation of the mixtures with an azeotroping agent forming a minimum boiling azeotrope with the ethylene glycol or 1,2-propylene glycol.

3,809,725

REACTION PRODUCT OF 2-VINYL-5-NORBORNENE WITH HEXAHALOCYCLOPENTADIENES

Richard Waldron Davenport, Lincoln Park, N.J., assignor to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed Apr. 17, 1972, Ser. No. 244,951

Int. Cl. C07c *23/20, 17/30*

U.S. Cl. 260—648 C **6 Claims**

The invention is new halodimethanonaphthalenes, namely 6-(1',4',5',6',7',7' - hexahalonorborn-5'-en-2'-yl)-1,2,3,4,10,10 - hexahalo - 1,4,4a,5,6,7,8,8a - octahydro-1,4:5,8 - dimethanonaphthalenes, especially 6 - (1',4',5',6',7',7' - hexachloronorborn - 5' - en-2'-yl)-1,2,3,4,10,10-hexachloro - 1,4,4a,5,6,7,8,8a - octahydro - 1,4:5,8 - dimethanonaphthalene (hereinafter "ZOR"), a method of synthesizing same by the reaction of 5-vinyl-2-norbornene with hexahalocyclopentadiene, and use of such chemicals for flameproofing organic polymeric materials, especially ABS resins to which the chemicals impart fire resistance with unexpected retention of desirable physical properties.

3,809,726

OLEFIN SEPARATION PROCESS

Hugh H. Horowitz, Elizabeth, and William E. Tyler III, Berkeley Heights, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed June 2, 1972, Ser. No. 259,251

Int. Cl. C07c *11/00*

U.S. Cl. 260—677 A **15 Claims**

An improved olefin separation process is effected by employing solutions of cuprous salts of the formula $CuO_2CC_nX_wX_yX_z$ wherein n is an integer varying from 1 to 6, X_w, X_y and X_z are independently selected from the group consisting of fluorine, chlorine and bromine atoms, w, y and z are integers varying from 0 to $2n+1$ and where $w+y+z$ is $2n+1$, dissolved in aromatic solvent moieties comprising substituted and unsubstituted low volatile aromatics provide a medium, whereby gaseous olefins such as ethylene and propylene, may be selectively absorbed and separated from feedstreams containing them while undesirable side reactions are avoided. The cuprous salts preferably employed are cuprous perfluoroacetate, propionate and butyrate and mixtures thereof.

3,809,727

DEHYDRATION OF 3-METHYL-3-BUTEN-1-OL

Marvin M. Johnson and Donald G. Kuper, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Apr. 24, 1972, Ser. No. 246,587

Int. Cl. C07c *1/24*

U.S. Cl. 260—681 **7 Claims**

A calcined composition comprising iron, phosphorus, and combined oxygen, and preferably also containing a Group 1A metal, is employed in the dehydration of 3-methyl-3-buten-1-ol to isoprene.

3,809,728

CATALYST REJUVENATION

Jacob D. Kemp, El Cerrito, and Bernard F. Mulaskey, Fairfax, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Jan. 19, 1973, Ser. No. 324,934

Int. Cl. C07c *5/28*

U.S. Cl. 260—683.68 **6 Claims**

Deactivated, supported hydrogen fluoride-antimony pentafluoride catalyst is rejuvenated by contacting the catalyst with liquid hydrogen fluoride and then with a liquid solution of HF-antimony pentafluoride.

3,809,729

FLAME RETARDANT THERMOPLASTIC COMPOSITIONS

Donald L. Reinhard, Albany, N.Y., assignor to General Electric Company

No Drawing. Filed June 10, 1971, Ser. No. 151,930

Int. Cl. C08f *29/12, 41/12, 45/56*

U.S. Cl. 260—874 **6 Claims**

Self-extinguishing and non-dripping thermoplastic compositions for molding are provided comprising a normally flammable polyphenylene ether resin and styrene resin or an aromatic polycarbonate resin and a flame retardant combination of up to 6 parts of hexabromobenzene per 100 parts of resin and an antimony compound, the weight ratio of antimony to bromine being sufficient to prevent dripping during ignition and before self-extinguishment. Optionally, it is beneficial to include a minor amount of an aromatic phosphate compound.

3,809,730

METHOXYMETHYLATION OF 3-(DIALKYL-PHOSPHONO) PROPIONAMIDES

John Henry Polevy and John Justin Randall, Cumberland, R.I., assignors to Synthron Chemicals, Inc., Pawtucket, R.I.

No Drawing. Filed Aug. 14, 1972, Ser. No. 280,331

Int. Cl. C07f *9/40*

U.S. Cl. 260—968 **9 Claims**

3-(dialkylphosphono) propionamides in which the alkyl groups have from 1 to 2 carbon atoms are heated with at least equimolar proportions of formaldehyde and methanol under strongly acidic conditions, and water together with excess formaldehyde and methanol are removed at reduced pressure to form a product which is primarily N - methoxymethyl - 3 - (dialkylphosphono) propionamide useful as a flame retardant agent.

3,809,731
METHOD OF FABRICATING A NUCLEAR REACTOR FUEL ELEMENT

Charles C. Woolsey, Jr., Calabasas, Calif., assignor to the United States of America as represented by the United States Atomic Energy Commission

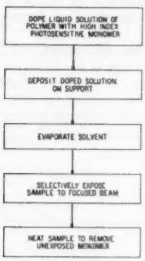
No Drawing. Filed Mar. 31, 1961, Ser. No. 99,701
Int. Cl. G26c *21/10*
U.S. Cl. 204—154.2 **7 Claims**

1. A method of preparing a fuel-moderator core of a nuclear reactor fuel element, which comprises forming a uranium-zirconium alloy, enclosing said alloy in a zirconium metal member, bonding together said members, and then hydriding the resulting assembly to yield said fuel-moderator core.

3,809,732
PHOTO-LOCKING TECHNIQUE FOR PRODUCING INTEGRATED OPTICAL CIRCUITS

Edwin Arthur Chandross, Berkeley Heights, Coralie Anne Pryde, Morristown, Walter John Tomlinson III, Holmdel, and Heinz Paul Weber, Middletown, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 18, 1972, Ser. No. 315,908
Int. Cl. G03c *5/16*
U.S. Cl. 264—22 **7 Claims**


DOPE LIQUID SOLUTION OF POLYMER WITH HIGH INDEX PHOTOSENSITIVE MONOMER
DEPOSIT DOPED SOLUTION ON SUPPORT
EVAPORATE SOLVENT
SELECTIVELY EXPOSE SAMPLE TO FOCUSED BEAM
HEAT SAMPLE TO REMOVE UNEXPOSED MONOMER

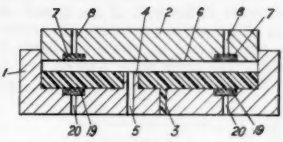
A technique for the fabrication of integrated optical circuits and related optical devices in which a transparent polymer film, which is doped with a higher index photosensitive monomer, is deposited from liquid solution on a suitably smooth support. Depending upon the particular dopant selected, it attaches to the polymer, dimerizes or polymerizes upon selective exposure to radiation of appropriate wavelength, in each case resulting in substantial reductions or even total elimination of the mobility and volatility of the dopant in the polymer matrix. Selected portions of the dopant are thus photochemically locked in the polymer film. The unexposed portions of the dopant are removed from the film by simple heating. The exposed areas remain as selected regions of increased index and thickness suitable for guiding optical beams.

3,809,733
PRODUCTION OF DOUBLE LAYER LAMINATES

Denis James Henry Sandiford, Welwyn, and Alan George Smith, Harrow, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of abandoned application Ser. No. 869,859, Oct. 27, 1969. This application Apr. 24, 1972, Ser. No. 246,862
Claims priority, application Great Britain, Nov. 6, 1968, 52,658/68
Int. Cl. B29d *27/00*; B29f *1/06*
U.S. Cl. 264—45 **14 Claims**

A laminate of synthetic polymeric materials is produced by an injection moulding process in which the first layer of the laminate is injected through a first sprue to fill the mould cavity which is then enlarged and a second amount of material is injected into the mould



through a second sprue which extends through the first layer. One of the charges, preferably the second, may conveniently be of foamable material.

3,809,734
FOAM PLASTIC SHEET FORMING PROCESS AND FOAM PLASTIC SHEET WITH HAIR-LIKE PILES

Tatsuo Watanabe, 5-3 Okuzawa 6-chome, Tokyo, Japan

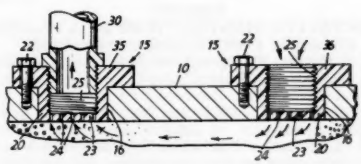
Filed Nov. 12, 1971, Ser. No. 198,119
Claims priority, application Japan, Nov. 14, 1970, 45/100,337
Int. Cl. B29d *7/20, 9/00, 31/00*
U.S. Cl. 264—51 **12 Claims**

This disclosure relates to a molding process and the plastic sheet produced by said process. The process is characterized by calender pressing a sheet of thermoplastic foam against a heated roll mold having a multiplicity of close-spaced needle-like holes in its surface, pressure-molding the outer layer of the base foam-plastic material sheet into the needle-like holes, by strongly applied external pressure and internal foaming pressure and removing said formed plastic sheet by cooling the sheet just prior to removal and removing the sheet in a hot surrounding atmosphere, thereby stretching the needle-like molded piles to from 3 to 5 times the depth of the needle-like holes.

3,809,735
METHOD OF MOULDING HEAT-EXPANDABLE THERMOPLASTIC POLYMERIC RESINOUS GRANULES INVOLVING ENHANCED DISTRIBUTION OF THE HOT GASEOUS MEDIUM IN THE MOLD CAVITY

Robert Frederick Joseph Cotterell, Caplan House, Barchester St., London E.14, England

Continuation-in-part of abandoned application Ser. No. 860,760, Sept. 24, 1969. This application Nov. 15, 1971, Ser. No. 198,766
Int. Cl. B29d *27/00, 27/08*
U.S. Cl. 264—51 **10 Claims**



Heat-expandable beads of thermo-plastic material such as polystyrene are moulded by steam heating in a metal

mould and venting the interior of the mould through apertures in plugs set into ports in the wall of the mould. The plugs are made of low heat conductivity material, for example nylon, to prevent the apertures being blocked by fusion of the beads in contact with the plugs due to heat condition from the wall of the mould. The steam may be introduced into the mould through apertures in nylon plugs set in ports in the wall of the mould, the low heat conductivity of the nylon preventing the steam raising the plugs to a temperature at which the beads would burn onto the plugs. The same plugs may be used to introduce steam into the mould and then vent the interior of the mould.

3,809,736

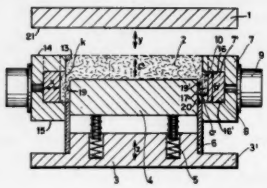
METHOD OF PRODUCING MOLDED ELEMENTS WITH PARTS OF DIFFERENT THICKNESSES FROM FIBROUS MIXTURES

Edmund E. Munk, Oberstenfeld, Germany, assignor to Furnier & Sperrholzwerk J. F. Werk Jr. K.G., Werzalit-Pressholzwerk, Oberstenfeld, Germany

Original application Apr. 28, 1969, Ser. No. 819,880. Divided and this application Oct. 26, 1971, Ser. No. 192,499

Int. Cl. B29 *5/06*

U.S. Cl. 264—120 **6 Claims**



A molding method for producing especially plate-shaped elements each of which is provided with a flange or wall portion projecting from one or more of its lateral edges from a mixture of comminuted fibrous materials and a binder, preferably of hot-setting synthetic resins, wherein the part of the mold chamber in which the thin lateral wall portion or portions are molded has a considerably greater width than the final thickness of this wall portion and thus permits the molding mixture to be easily filled uniformly into the entire mold chamber. The mixture in the lateral downwardly projecting chamber part or parts is then first compressed by lateral, horizontally moving dies to the final thickness of the wall portions, whereupon several lower dies are moved independently of each other to press against the thin lower ends of the precompressed wall portions and against the lower side of the material in the main part of the mold chamber to compress the material in the entire mold chamber to the dimensions and shape of the final product.

3,809,737

PROCESS FOR MANUFACTURE OF A PLASTIC CONDUIT CONNECTOR COMPONENT

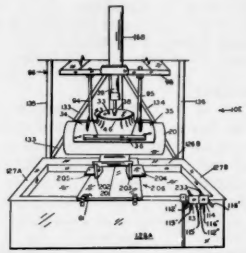
Frank J. Rogers, Waka, and Joe Mac Close, Spearman, Tex., assignors to Rogers Sales & Service, Inc., Waka, Tex.

Application Sept. 13, 1971, Ser. No. 180,023, which is a continuation-in-part of application Ser. No. 55,113, July 15, 1970, now Patent No. 3,654,008, which in turn is a continuation-in-part of application Ser. No. 831,814, May 22, 1969, now abandoned. Divided and this application Dec. 1, 1972, Ser. No. 311,291

Int. Cl. B29c *3/00*

U.S. Cl. 264—154 **4 Claims**

Process for forming a plastic T comprising a hollow conduit with sput projecting laterally from and connected



by a softly curved surface to said conduit, for use with a saddle and/or stem unit.

3,809,738

PRODUCTION OF ACRYLIC COMPOSITE FIBERS

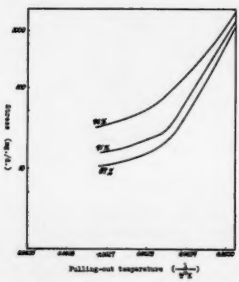
Keitaro Shimoda, Yutaka Kobayashi, and Takehiko Sumi, Okayama, Japan, assignors to Japan Exlan Company, Limited, Osaka, Japan

Continuation of application Ser. No. 879,828, Nov. 25, 1969. This application Dec. 5, 1972, Ser. No. 312,355

Claims priority, application Japan, Nov. 26, 1968, 43/86,839

Int. Cl. D01d *5/22*

U.S. Cl. 264—168 **2 Claims**



An improvement in production of acrylic conjugate fibers having latent three-dimensional coil crimps, which improvement concerns (1) utilizing a high shrinking polymer component containing 85–94% acrylonitrile and a low shrinking component containing a greater amount of acrylonitrile than the high shrinking component, (2) heat-treating the filaments in a relaxed state at 105–140° C. while maintaining a moisture content of more than 150% and (3) pulling the filaments out of said treatment under specific temperature and tension conditions.

3,809,739

HIGH SPEED MOLDING PROCESS

Robert J. Gelin, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

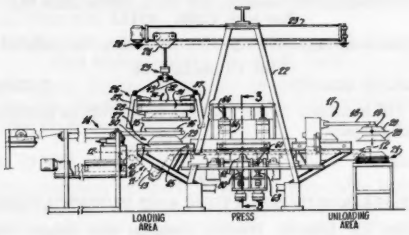
Continuation of abandoned application Ser. No. 883,542, Dec. 9, 1969. This application Mar. 13, 1972, Ser. No. 234,297

Int. Cl. B29g *1/00*

U.S. Cl. 264—297 **6 Claims**

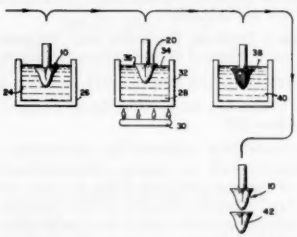
A high speed molding system for forming molded plastic articles which has a plurality of latching molds which

are sequentially presented to a single molding press. After a mold is moved in open position to the press by a conveyor, molding pressure is applied to molding composition between the mold halves and the mold is mechanically latched within the press. An inflatable bag is expanded



within the latched mold to apply and maintain mold pressure after the latched mold is released from the press. The latched mold is then conveyed from the press, while curing, to an unloading station and, after the formed article is removed, is cleaned and returned to the press for subsequent use.

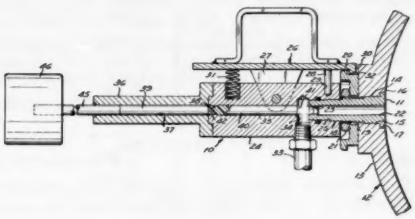
3,809,740
FLOWER CANDLE MOLDING PROCESS
Timothy S. Milonas and Janet O. Milonas, both of 278 Dennis Drive, Daly, Calif. 94518
Filed Jan. 7, 1972, Ser. No. 215,996
Int. Cl. B29c *13/00*
U.S. Cl. 264—306 **8 Claims**



Detailed, finely shaped objects are prepared of relatively thin wax films by introducing a generally conically shaped mold of a porous material into cold water, dipping the wet mold into hot wax, allowing the wax to drain, and rapidly solidifying the wax by introducing the coated mold in cold water, whereby the shaped wax object is freely released from the mold.

3,809,741
METHOD FOR INJECTING MOLDABLE MATERIAL INTO A MOLD
Arthur J. Wiltshire, Cleveland, Ohio, assignor to Structural Fibers, Inc., Chardon, Ohio
Original application July 11, 1968, Ser. No. 744,042, now Patent No. 3,570,069. Divided and this application Sept. 17, 1970, Ser. No. 72,969
Int. Cl. B29f *1/05*
U.S. Cl. 264—328 **1 Claim**

Method for connecting a source of resinous material to be molded to an inlet fitting on a mold and for inserting a plug in the fitting before the source of resinous material is disconnected from the fitting. The method includes the steps of coupling a resin delivery passageway to the inlet fitting, flowing a measured amount of resin



through the passageway and fitting into the mold and, while the resin delivery passageway is coupled to the fitting, closing the resin inlet fitting with a plug.

3,809,742
PROCESS FOR RECOVERING BARIUM FROM BARIUM SULFIDE LEACHING RESIDUES
Hartmut Simoleit, Hannover, and Helmut Schneider, Heilbronn, Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany
No Drawing. Filed July 9, 1971, Ser. No. 161,919
Claims priority, application Germany, July 9, 1970, P 20 34 065.2
Int. Cl. C01f *1/00*; C01b *17/32, 17/42*
U.S. Cl. 423—155 **4 Claims**

Process for recovering barium from barium sulfide leaching residues which comprises suspending the residues in water, introducing hydrogen sulfide or sulfur into the suspension whereby the barium is converted into readily soluble compounds thereof, separating from the resulting aqueous solution any insoluble residues present and recovering the desired barium compounds from the aqueous solution.

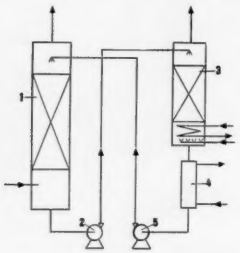
3,809,743
PROCESS FOR TREATING AUTOMOTIVE EXHAUST
Mark L. Unland, Creve Coeur, and George E. Barker, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Jan. 7, 1972, Ser. No. 216,224
Int. Cl. B01d *50/00*
U.S. Cl. 423—213.5 **21 Claims**

For use in the treatment of automobile exhaust gases, a catalyst combination having both oxidation and reduction capability is employed in a first converter, the catalyst having a ruthenium containing section followed by a section containing another noble metal, e.g., rhodium. Nitrogen oxides are removed with little production of ammonia.

3,809,744
PROCESS FOR THE REMOVAL OF NITRIC OXIDES FROM EXHAUST GASES
Georg von Semel, Schwanenwall, and Eduard Schibilla, Am Sperrtor, Germany, assignors to Friedrich Uhde GmbH, Dortmund, Germany
Filed Mar. 29, 1972, Ser. No. 239,103
Claims priority, application Germany, Apr. 6, 1971, P 21 17 226.9
Int. Cl. B01d *53/34*
U.S. Cl. 423—235 **4 Claims**

A process for the removal of nitric oxides from tail gases such as are contained in large quantities in nitric acid plants. The tail gases are scrubbed with a nitric vanadium

(V) solution, and the effluent solution is regenerated by heating it to a temperature ranging from 90° C. to the boiling point and using air as stripping fluid. The regenerated vanadium solution is cooled and then used as scrubbing fluid.



3,809,745

PROCESS FOR THE ENTRAPMENT AND RECOVERY OF SO_2 GAS

Harold W. Wilson, El Paso, Tex., assignor to Golden Cycle Corporation, Colorado Springs, Colo.

No Drawing. Continuation of application Ser. No. 885,612, Dec. 16, 1969, which is a continuation-in-part of application Ser. No. 777,503, Nov. 20, 1968. This application Mar. 10, 1972, Ser. No. 233,785

Int. Cl. B01j *9/04, 9/08, 9/12;* C01b *17/00*

U.S. Cl. 423—244 9 Claims

Waste stack gases or other gases containing sulfur dioxide gas are passed into a system initially containing 90 to 95% of finely divided metallic oxides and metallic silicates, intimately admixed with an additive comprising not less than 3% or more than 5% water, not less than 2% or more than 5% dissolved alkali hydroxide such as sodium hydroxide or sodium metasilicate and between .01% to 0.1% stannous chloride or stannous hydroxide, all of the above noted percentages being based on parts by weight of each noted ingredient present in every 100 parts by weight of the slag containing system. The system is strongly agitated during the time the waste stack gas is being passed therethrough. The sulfur dioxide constituent of the stack gas is entrapped in the slag system and can be liberated therefrom in essentially pure form by subsequent heat treatment of the entrapment system. The system can thereupon be reused repeatedly for entrapment of further SO_2 gas because it is essentially regeneratable due to the addition of the additives noted above which prevent undue oxidation of the components of the system.

ERRATUM

For Class 423—277 see:
Patent No. 3,809,762

3,809,746

PROCESS FOR PRODUCING POTASSIUM SUPEROXIDE

Satoshi Takahashi, Tokyo, Japan, assignor to Fire Research Institute, Fire Defence Agency, Ministry of Home Affairs, Tokyo, Japan

No Drawing. Filed Feb. 11, 1972, Ser. No. 225,637
Claims priority, application Japan, Feb. 22, 1971, 46/7,999

Int. Cl. C01b *13/00, 15/00*

U.S. Cl. 423—581 5 Claims

Potassium hydroxide and a concentrated aqueous hydrogen peroxide solution are mixed under high vacuum the compounds forming potassium peroxide-hydrogen peroxide $K_2O_2 \cdot 2H_2O_2$ which is heat-dried and then dehydrated at an elevated temperature to form potassium superoxide KO_2.

3,809,747

SOLUTION FOR TREATMENT OF HAIR AND SCALP

Catherine M. Toscano, 1657½ E. Santa Clara St., San Jose, Calif. 95113

No Drawing. Filed Apr. 20, 1972, Ser. No. 245,939

Int. Cl. A61k *7/06*

U.S. Cl. 424—70 2 Claims

The treatment of the hair and scalp with an extract of chili peppers.

3,809,748

KALLIKREIN ISOLATION AND PURIFICATION

Boen Tie Khouw, Weston, Ontario, and Johan Peter Kesler, Rexdale, Ontario, Canada, assignors to Canada Packers Limited, Toronto, Ontario, Canada

No Drawing. Filed Mar. 6, 1972, Ser. No. 232,203

Int. Cl. A61k *17/00*

U.S. Cl. 424—110 14 Claims

Comminuted hog pancreas is extracted with salt solution, a protein-precipitating salt is added to the extract in fractions to first precipitate protein impurities and to then precipitate crude kallikrein. The crude kallikrein is further purified by dialysis, and highly purified kallikrein is recovered from the resulting solution by adsorption on a strongly basic, synthetic, macroreticular, anion exchange resin.

3,809,749

TOPICAL PHARMACEUTICAL COMPOSITION AND METHOD EMPLOYING SAP FROM THE TREE *CROTON LECHLERI*

Georgia J. Persinos, Rockville, Md., assignor to The Amazon Natural Drug Company, Oakton, Va.

No Drawing. Filed Mar. 5, 1971, Ser. No. 121,516

Int. Cl. A61k *7/00, 9/06, 27/14*

U.S. Cl. 424—195 10 Claims

A pharmaceutical composition for topical use is provided characterized in that a therapeutically effective amount of the sap obtained from the tree *Croton lechleri,* M. Arg., (Euphorbiaceae) is incorporated in a pharmaceutically acceptable topical base or carrier. The pharmaceutical composition so produced will be found to be of particular utility in the treatment of minor cuts, abrasions, and like skin wounds by the topical application of the composition thereto.

3,809,750

METHOD OF TREATING HYPERTENSION IN ANIMALS WITH AN EXTRACT OF BARKS OF ANACARDIACEAE

Yvonne Thuillier, Paris, and Paulette Giono-Barber, born Michel, Crouy-sur-Ourcq, France, assignors to Albert Rolland S.A., Paris, France

No Drawing. Continuation-in-part of abandoned application Ser. No. 56,002, July 17, 1970. This application Sept. 29, 1972, Ser. No. 293,516

Claims priority, application Great Britain, July 19, 1969, 36,427/69

Int. Cl. A61k *27/00, 27/14*

U.S. Cl. 424—195 1 Claim

An anti-hypertensive fraction for treatment of animals

is extracted from fresh powdered bark of *Anacardium occidentale* L (the cashew tree) by maceration with water in the dark at 0–5° C.

3,809,751

ANTIBIOTIC-STABLE LIQUID PROTEIN SUPPLEMENTS CONTAINING NON-PROTEIN NITROGEN, PHOSPHORUS AND A TETRACYCLINE ANTIBIOTIC

Anthony Abbey, Milltown, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 802,195, Feb. 25, 1969. This application Sept. 24, 1970, Ser. No. 75,242

Int. Cl. A61k *21/00*

U.S. Cl. 424—227 **6 Claims**

This invention relates to novel antibiotic-stable liquid protein supplements containing a source of nonprotein nitrogen, phosphorus, an antibiotic selected from the group consisting of tetracycline antibiotics and bacitracin and from about 1% to 8% by weight of a physiologically acceptable salt of a divalent or trivalent metal which forms an insoluble or unionizable salt or complex with phosphorus and which metal is selected from the group consisting of nutritionally essential metals and aluminum, said supplement having a pH between about 7.0 and 9.0. This invention also relates to a method for the preparation of the above-mentioned antibiotic-stable liquid protein supplements.

3,809,752

ANTI-OBESITY PROCESS

William H. Fishman, 56 Mason Terrace, Brookline, Mass. 02146, and Wilem G. Linscheer, 1 Kirby Drive, Canton, Mass. 02021

No Drawing. Filed Mar. 24, 1971, Ser. No. 127,824

Int. Cl. A61k *27/00*

U.S. Cl. 424—224 **12 Claims**

The intestinal absorption of fatty acids is inhibited by the administration of specific inhibitors for intestinal alkaline phosphatase. Inhibition is temporary and reversible.

3,809,753

ANTITHROMBOTIC AGENTS

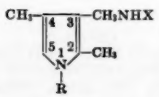
Robert Douglas MacKenzie, Cincinnati, Ohio, and Charles Harmon Tilford, Atlanta, Ga., assignors to Richardson-Merrell Inc., New York, N.Y.

No Drawing. Filed Mar. 8, 1973, Ser. No. 339,147

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 **14 Claims**

Pyrrolemethylamine derivatives useful as antithrombotic agents are compounds having the formula



wherein R is a hydrocarbon radical or a nitrogen-containing hydrocarbon radical and X is a substituted aminoalkyl radical.

3,809,754

METHOD OF TREATING DISEASES OF THE MUCOUS MEMBRANE USING COMPOUNDS OF A THIAZOLIDINE CARBOXYLIC ACID AND PHARMACEUTICAL PREPARATIONS THEREOF

Francois Robert Bertrand, Geneva, Switzerland, assignor to Medial de Toledo & Cie, Geneva, Switzerland

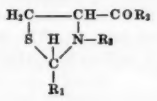
No Drawing. Continuation-in-part of abandoned application Ser. No. 889,293, Dec. 30, 1969. This application Dec. 30, 1971, Ser. No. 214,479

Claims priority, application France, Dec. 31, 1968, 182,571

Int. Cl. A61k *27/00*

U.S. Cl. 424—270 **8 Claims**

Mucolytic and antitussive medicament comprising derivatives of thiazolidine carboxylic acid of the formula,



wherein

R_1 represents hydrogen, an alkyl, aryl, hydroxy, alkyloxy, aryloxy, heterocyclic, amino or carboxylic acid or ester, all of the these groups capable of being substituted, whether substituted or not;

R_2 represents an amino, hydroxy, alkyloxy, aryloxy, heterocyclic, mono- and dialkylamino, —$NHCH_2OH$, or morpholine radical, all of these groups capable of being substituted, whether substituted or not; and

R_3 represents hydrogen, an alkyl, including cycloalkyl, heterocyclic, aryl, carboxylic acid or carboxylic acid ester group.

3,809,755

CERTAIN 2-OXAZOLYLTHIOUREAS AS FUNGICIDES

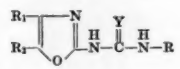
George Crank, Engadine, New South Wales, Australia, assignor to Lilly Industries, Ltd., London, England

No Drawing. Application Nov. 9, 1970, Ser. No. 88,085, now Patent No. 3,705,903, which is a continuation-in-part of abandoned application Ser. No. 53,982, July 10, 1970. Divided and this application July 28, 1972, Ser. No. 275,983

Int. Cl. A01n *9/22, 9/28*

U.S. Cl. 424—272 **4 Claims**

2-carbamido and thiocarbamidooxazoles of the formula



where Y is 0 or S and R is hydrogen, alkyl or aryl and R_1 and R_2 are H, alkyl, aryl, CF_3, carbalkoxy or carboxamido; are prepared by reacting a 2-aminooxazole with an aryl or alkyl isocyanate or isothiocyanate. The carbamido and thiocarbamidooxazoles are useful in alleviating inflammation in warm-blooded mammals and the thiocarbamidooxazoles are particularly useful in method for controlling fungus infections in plants.

3,809,756

LOWER CALORIE CANDY

John W. Bush, Chicago, and Edmund J. Pyrz, Elk Grove Village, Ill., assignors to American Home Products Corporation, New York, N.Y.

Filed Apr. 27, 1971, Ser. No. 137,909
Int. Cl. A23g 3/00
U.S. Cl. 426—201 2 Claims

A reduced calorie candy is described characterized by the substitution of up to about 27 percent gum arabic, up to about 27 percent of microcrystalline cellulose, and soy protein for a portion of the beet sugar, corn syrup, vegetable fat and nutmeats usually used in such compositions. Calorie reduction up to about 35 percent may be obtained without loss of the texture or flavor of high caloric candy.

3,809,757

FLAVOURING AGENT

Joyce M. Kiley and Roger T. Kiley, Bricktown, N.J., assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

No Drawing. Filed Sept. 17, 1971, Ser. No. 181,623
Int. Cl. A23l 1/26; C11b 7/00
U.S. Cl. 426—223 13 Claims

A flavoring agent is prepared by treating orange oil with propylene glycol and a hydrocarbon solvent and recovering a propylene glycol phase substantially free of hydrocarbon solvent.

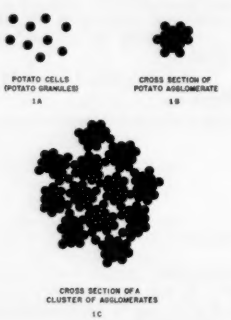
3,809,758

CLUSTERS OF DEHYDRATED POTATO AGGLOMERATES

James J. Mathias and Robert L. Holland, Blackfoot, Idaho, assignors to American Potato Company, San Francisco, Calif.

Filed Nov. 10, 1971, Ser. No. 197,362
Int. Cl. A23b 7/03; A23l 1/06
U.S. Cl. 426—285 7 Claims

A fluidized bed of dehydrated potato agglomerates, having been screened to pass a seven mesh screen and to be retained on a 40 mesh screen with a bulk density of about 0.4–0.5 g./ml., is contacted with an aqueous binding solution containing milk solids to form clusters thereof. Said clusters are then dried to a moisture content of about 7% and then screened to isolate those clusters over about an eight mesh screen with a bulk density of about 0.247 to 0.33 g./ml. The firm low density, porous clusters of the process form mealy mashed potatoes when wetted with 4.5 parts by weight of hot water without mixing or by merely mixing with a fork.



3,809,759

PHARMACEUTICAL COMPOSITION FOR TREATING MENTAL FATIGUE CONTAINING ARGININE-POTASSIUM PHOSPHO CITRO GLUTAMATE AND METHOD OF USING THE SAME

Dominique Bocher, 11 Rue du Moulin Vert, Paris 14e, France, and Robert Faure, 49 Ter, Rue de la Baste, Vaux le Penil, France

No Drawing. Filed Nov. 19, 1970, Ser. No. 91,195
Claims priority, application France, Nov. 21, 1969, 6940125
Int. Cl. A61k 27/00
U.S. Cl. 424—317 11 Claims

This invention relates to arginine-potassium phospho citro glutamate and its preparation, as well as a pharmaceutical composition containing the same and the use of the latter in the treatment of physical and psychic asthenia.

3,809,760

CALCIUM SALT OF N-ACETYL-6-AMINO-HEXANOIC ACID AND MEDICAMENTS CONTAINING THIS SALT

Maurice H. Thely, Paris, France, assignor to Choay S.A., Paris, France

Filed Sept. 22, 1970, Ser. No. 74,286
Claims priority, application France, Sept. 25, 1969, 6932798
Int. Cl. A61k 27/00
U.S. Cl. 424—319 4 Claims

The invention relates to the calcium salt of N-acetyl-6-amino-hexanoic acid and new medicaments based thereon. The new salt is prepared by reacting calcium hydroxide or calcium oxide with acexamic acid. It can be used alone or in association with other active substances in treatments favoring tissular repair disturbed by pathological affections of the conjunctive tissue.

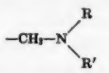
3,809,761

METHOD FOR REDUCING PLASMA LIPID LEVELS

Sidney I. Lerner, Cincinnati, Ohio, assignor to Ethyl Corporation, Richmond, Va.

No Drawing. Continuation-in-part of application Ser. No. 19,080, Mar. 12, 1970, now Patent No. 3,714,365, which is a continuation-in-part of abandoned application Ser. No. 357,777, Apr. 6, 1964. This application Nov. 10, 1972, Ser. No. 305,455
Int. Cl. A61k 27/00
U.S. Cl. 424—330 1 Claim

Plasma lipid levels are reduced by internally administering a phenol having a nitrogen-containing group bonded to the phenolic nucleus. A typical nitrogen-containing group is



Exemplary phenols are 2,6-di-tert-butyl-α-dimethylamino-p-cresol, α,α′-(methylimino)bis(2,6-di-tert-butyl-p-cresol) and $\alpha^2,\alpha^4,\alpha^6$-tris(dimethylamino)mesitol. Trinuclear phenols are also disclosed as are salts such as hydrochlorides.

3,809,762

SYNTHESIS OF SODIUM HYDROXYTRIFLUOROBORATE

Louis O. Gilpatrick, Oak Ridge, Tenn., assignor to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Aug. 18, 1972, Ser. No. 281,664
Int. Cl. C01b 7/00, 35/00
U.S. Cl. 423—277 4 Claims

Sodium hydroxytrifluoroborate is synthesized by reacting bicarbonate of soda with boron trifluoride.

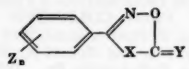
3,809,763

CERTAIN ARYL-DIOXAZOLES USED AS FUNGICIDES

Klaus Sasse, Schildgen, and Paul-Ernst Frohberger, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Nov. 26, 1971, Ser. No. 202,668
Claims priority, application Germany, Dec. 5, 1970, P 20 59 990.0
Int. Cl. A01n 9/22
U.S. Cl. 424—272 3 Claims

Fungicidal compositions of and methods of combating fungi using certain 5-aryl-1,3,4-dioxoazole-(thi)ones-(2) and 3-aryl-1,4,2-oxathiazole-(thi)ones-(5) of the formula



(I)

in which

X is oxygen or sulfur,
Y is oxygen or sulfur,
Z is halogen, methyl or methoxy, and
n is 0, 1 or 2.

ERRATA

For Classes 426—201, 426—223 and 426—285 see: Patents Nos. 3,809,756 thru 3,809,758

3,809,764

LOW CALORIE TOPPING, SPREAD, AND FROZEN DESSERT

John Lester Gabby, Dennis Dale Corbin, and Jack Brunner Lowe, Evansville, Ind., assignors to The Dracket Company, Cincinnati, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 74,211, Sept. 21, 1970. This application June 16, 1971, Ser. No. 153,837
Int. Cl. A23g 3/00
U.S. Cl. 426—163 13 Claims

Low-fat imitation oleaginous spreads, whipped toppings, or ice cream are prepared by whipping an aqueous dispersion containing from ⅓ to 7.5% by weight of a polyglycerol fatty ester and from 0.2 to 3% by weight of a hydrophilic colloid which acts as stabilizer for the foam. No fat or oil as such is required in the preparation.

3,809,765

METHOD FOR THE PRODUCTION OF FOODSTUFFS IN THE FORM OF POWDERS

Arthur O. T. Bratland, Untere Augartenstrasse 1-3/5/15, Vienna 2, Austria

No Drawing. Filed June 5, 1970, Ser. No. 43,933
Claims priority, application Austria, June 6, 1969, A 5,409/69
The portion of the term of the patent subsequent to Apr. 7, 1987, has been disclaimed
Int. Cl. A23c 9/00
U.S. Cl. 426—358 15 Claims

A powdered foodstuff is prepared by initially mixing a milk membrane substance concentrate with a milk product and a fat. The mixture is emulsified and thereafter homogenized. The water content of the homogenized emulsion is then reduced and the emulsion dried to obtain the powder. The milk product ingredient is selected from the group consisting of buttermilk, skim milk, whole milk and mixtures thereof while the fat is selected from a group consisting of cream, milk fat, vegetable fat, butter, animal fat and mixtures thereof. The drying can be carried out by freeze drying or spray drying.

3,809,766

METHOD FOR PRODUCING AN ENHANCED FREEZE DRIED COFFEE

Robert P. Stolz, Dumont, N.J., assignor to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed May 12, 1972, Ser. No. 252,773
Int. Cl. A23f 1/08
U.S. Cl. 426—362 12 Claims

An aromatized glyceride is distributed in discrete particle or droplet form onto the surface of a slab of partially frozen coffee extract which is then completely frozen, comminuted and freeze dried. The aromatized glyceride may be in the form of frozen particles, and the aromatized slab of coffee extract may be covered with an upper layer of extract.

3,809,767

METHODS OF MAKING VEGETABLE PROTEIN CONCENTRATES

Louis Sair, Evergreen Park, and Irving Melcer, Park Forest, Ill., assignors to The Griffith Laboratories, Inc., Chicago, Ill.

No Drawing. Original application May 12, 1969, Ser. No. 823,969, now abandoned. Divided and this application Sept. 7, 1971, Ser. No. 178,464
Int. Cl. A23j 3/00
U.S. Cl. 426—364 40 Claims

Methods of producing comestible, uniformly palatable, vegetable protein concentrate either (1) having natural structure or natural texture, or (2) not having natural structure or natural texture, which comprise extracting vegetable protein meal having defatted soy protein or defatted peanut protein materials having natural structure or natural texture and having a nitrogen solubility index above 15% by weight (preferably above 40% by weight) in the vicinity of the isoelectric pH of the recovered protein content thereof and substantially removing the soluble, undesired or objectionable, characteristic taste-conferring material and recovering the insoluble, wet protein material, partly drying said wet, insoluble protein material to reduce the moisture content thereof under controlled conditions to moisture content within the range of about 5 to 55% (preferably within the range of about 20–45%) without lowering its nitrogen solubility index to below 15% by weight (preferably not below 40% by weight), selectively raising the pH ("neutralizing") of the protein material of said partly dried, insoluble protein material, in the presence of water, within the pH range of about 5.5 to 10.5, and either drying the protein material having the raised pH under controlled conditions or, in a selected sequence, drying said protein material under controlled conditions and comminuting said protein material, to produce said vegetable protein concentrate which is characterized by

(a) having been substantially freed of undesired or objectionable, characteristic taste-conferring material which characterizes the vegetable protein material from which the concentrate is prepared,
(b) good protein solubility and minimized denaturation characteristics as evidenced by a nitrogen solubility index of at least 15% by weight (preferably at least 40% by weight),
(c) good water-absorption and water-retention properties,
(d) good water-binding properties, and
(e) at least about 60% by weight protein on a dry weight basis (preferably at least about 70% by weight protein on a dry weight basis).

Comminuting (e.g., grinding or subdividing by suitable means) tends to result in the attendant loss of at least some of the natural structure or natural texture of the concentrate, and provides a concentrate having enhanced emulsifying properties.

3,809,768

METHOD OF ASEPTIC PACKING A FOOD PRODUCT

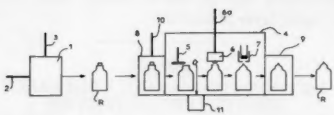
Jean-Luc Berry, Mesnil sur l'Estree, France, assignor to E. P. Remy et Cie, Dreux, France

Filed July 22, 1971, Ser. No. 165,266

Claims priority, application France, July 31, 1970, 7028498

Int. Cl. A23l *3/00*

U.S. Cl. 426—309 8 Claims



The method of the invention consists in introducing containers, while sterilizing them externally, into a packing enclosure which is previously sterilized and maintained sterile together with everything contained therein, without destroying its sterility, the said enclosure containing devices for the transfer, the opening, the filling with the previously sterilized product to be packed into the container and the closing of said container, in opening the said containers, in filling them with the said product, in closing them sealingly, and in discharging them from the said enclosure without destroying the sterility of the latter.

3,809,769

METHOD OF EXTRACTING TEA

Harold Rivkowich, Ossining, N.Y., and Warren C. Rehman, Montvale, William Knapp, Matawan, and Bert Borders, Keyport, N.J., assignors to Tetley Inc., New York, N.Y.

No Drawing. Filed Dec. 31, 1970, Ser. No. 103,276

Int. Cl. A23f *3/00*

U.S. Cl. 426—312 4 Claims

The spent leaf discharge from an aqueous tea extraction step is treated with an oxidizing agent in the presence of water at elevated temperatures.

3,809,770

METHOD FOR PRODUCING ENHANCED SOLUBLE FOODSTUFFS

Michael D. Jolly, Highland Mills, N.Y., and George A. Jasovsky, Bayonne, Rudolf A. Vitti, Dumont, Gaetano J. De Ceglie, Palisades Park, Anthony T. Nacci, Bergenfield, and Harold Schechter, Hewitt, N.J., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed May 12, 1972, Ser. No. 252,772

Int. Cl. A23f *1/08*

U.S. Cl. 426—362 4 Claims

Soluble foodstuffs, such as soluble coffee, are enhanced by incorporating volatile enhancers into a liquid glyceride carrier, such as an oil, and then blending the enhanced liquid glyceride with a liquid comestible which is maintained at a sufficiently low temperature to congeal the enhanced liquid glyceride. Preferably the liquid comestible is in the form of a slush. The liquid, containing particles of congealed glyceride uniformly distributed throughout, is then dried, preferably by freeze drying.

3,809,771

PROCESS FOR OBTAINING FULL-FAT OILSEED-PROTEIN BEVERAGES

Gus C. Mustakas, Peoria, Ill., assignor to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Aug. 8, 1972, Ser. No. 278,845

Int. Cl. A23l *1/20*

U.S. Cl. 426—364 7 Claims

A full fat oilseed beverage is prepared by suspending full-fat oilseed flour in water, inactivating the lipoxygenase, precipitating the lipid-protein, resuspending the precipitate in water at pH of about 9, heating and cooling the suspension, adjusting the pH to about 7 and clarifying.

3,809,772

PROCESS FOR PREPARING A FOOD ADJUNCT FROM COLLAGEN

Howard W. Jones, 49 Pawnee Road, New Britain Borough, Bucks County, Pa., and Robert A. Whitmore, 705 E. Mermaid Lane, Philadelphia, Pa. 19118

No Drawing. Original application Feb. 27, 1970, Ser. No. 15,304. Divided and this application Jan. 5, 1971, Ser. No. 104,173

Int. Cl. A23j *1/10, 3/00*

U.S. Cl. 426—364 1 Claim

Collagen is made stable to heat and water deformation by treatment with glyceraldehyde. The collagen can be treated by mixing glyceraldehyde into a collagen dispersion or by immersing it in an aqueous solution of glyceraldehyde at a temperature of from 0 to 40° C. The concentration of glyceraldehyde varies with the density of the collagen being treated, the length of time the collagen is immersed in the glyceraldehyde and the temperature of the glyceraldehyde.

3,809,773

METHOD FOR PREPARING A LIQUID IRON-FORTIFYING COMPOSITION

George N. Bookwalter, Peoria, Ill., assignor to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Feb. 25, 1972, Ser. No. 229,581

Int. Cl. A23l *1/30*

U.S. Cl. 426—380 4 Claims

A method for preparing highly stable, liquid, iron-fortifying compositions containing up to 1 percent by weight of ferrous or ferric ions. An aseptic and deaerated aqueous solution of an iron salt is prepared and blended with a high D.E. corn syrup. Food products such as baby formulas, bread and fruit drinks may be iron-supplemented with the iron-fortifying compositions.

3,809,774

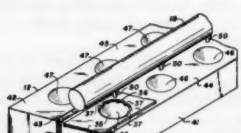
LOADING PROCESS FOR ICE CREAM CARRIER STRIP

Edward D. Raitt, 5525 Blenheim St., Vancouver 14, British Columbia, Canada

Filed June 2, 1972, Ser. No. 259,097

Int. Cl. A23g *5/02*

U.S. Cl. 426—393 4 Claims



A method of loading a carrier strip with scoops of ice cream including the steps of providing the carrier strip

with holes having radial prongs on the side edges thereof, placing the carrier strip between halves of a die each having hemispherical cavities, charging the cavities with ice cream in a fluid state to form scoops within the holes and and with the radial prongs embedded and supporting the scoops, and reducing the temperature of the die to harden the ice cream prior to removal of the carrier strip.

3,809,775

PREPARATION OF COFFEE

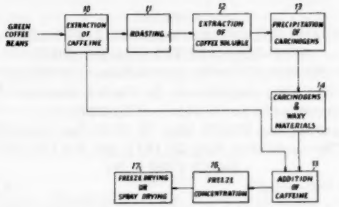
Neophytos Ganiaris, Riverdale, N.Y., assignor to Struthers Scientific and International Corporation

Filed July 19, 1972, Ser. No. 273,258

Claims priority, application Great Britain, July 19, 1971, 33,812/71

Int. Cl. A23f *1/04*

U.S. Cl. 426—427 **3 Claims**



A process for preparation of liquid extract concentrate is described in which carcinogenic elements are eliminated by precipitation from a chilled decaffeinated extract solution which is thereafter dried. Caffein is added to the liquid extract before drying and after removal of carcinogenic elements.

3,809,776

ENZYMIC DEGRADATION OF NUCLEIC ACIDS IN SCP MATERIALS

Kwei C. Chao, Homewood, Ill., assignor to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Feb. 22, 1971, Ser. No. 117,768

Int. Cl. C12c *11/00*

U.S. Cl. 426—431 **8 Claims**

The nucleic acid content of single-cell protein (SCP) materials is reduced to a level acceptable in food products by physiological conditioning of unicellular microorganisms followed by degradation of nucleic acids by endogenous nucleases and leakage of degraded products into the surrounding medium. The treatment is accomplished under conditions of continuous sparging with oxygen, controlled temperature stages and buffered pH control. There is no substantial removal of protein material from the cells.

3,809,777

METHOD FOR COOKING FOODSTUFFS

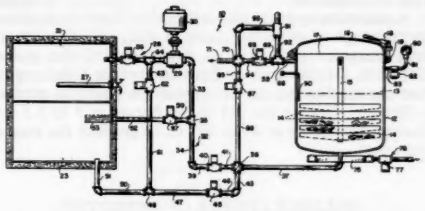
Neal W. Thompson, 6097 Steubenville Pike, McKees Rocks, Pa. 15136

Continuation-in-part of abandoned application Ser. No. 665,478, Sept. 5, 1967, and a division of application Ser. No. 747,760, July 1, 1968. This application Sept. 30, 1971, Ser. No. 185,183

Int. Cl. A22c *18/00*

U.S. Cl. 426—438 **12 Claims**

A method for cooking foodstuffs by immersing them in a heated liquid cooking medium contained in a pressure vessel, closing the vessel and relieving the pressure therein when it reaches a predetermined high limit. The pressure is then relieved to a low limit. The cycle is repeated until the foodstuffs are cooked. The cooking medium is then discharged from the vessel under the urging of the pressure



of the steam remaining in the vessel. Upon complete discharge of the cooking medium, the vessel is completely vented of residual steam. The discharged cooking medium, if desired, is filtered of all solid residue and is then ready for reuse.

3,809,778

PROCESS FOR THE COMPLETE UTILIZATION OF COCOA FRUITS

Ulla Drevici and Noe Drevici, both of 100 Central Park S., New York, N.Y. 10019

No Drawing. Filed July 23, 1971, Ser. No. 165,396

Int. Cl. A23l *1/00*

U.S. Cl. 426—481 **11 Claims**

Valuable products are obtained from Theobroma fruits by preferably removing the peels from said fruits, opening the fruits, separating the seeds from the preferably peeled parenchymatous part of the fruits, and immediately thereafter fermenting the seeds and processing said parenchymatous part. Preferably the fruits are pretreated, for instance, with an alkaline solution and, after peeling, are neutralized, or they are pretreated with a preserving agent. The parenchymatous part of the fruits is expressed to yield the fruit flesh juice containing a hydrocolloid which has proved to be a valuable emulsifying, thickening, stabilizing, suspending agent and protective colloid. The expressed Theobroma fruit flesh is converted into a nutritious animal feed, especially for small animals. Thus the Theobroma fruits are substantially completely utilized.

3,809,779

UREA SUPPLEMENTED PAUNCH CONTENT WITH TRICHLOROACETIC ACID PROTEIN PRECIPITANT

Kyu-Yawp Lee, 766 Leawood Drive, Omaha, Nebr. 68154

No Drawing. Filed Apr. 2, 1973, Ser. No. 346,734

Int. Cl. A23k *1/00*

U.S. Cl. 426—335 **3 Claims**

The conversion of ruminant paunch content into a valuable and useful product and the reduction of highly undesirable odors therefrom by treating it with trichloroacetic acid and urea.

3,809,780
PREPARATION OF A SEASONING AGENT
Kengo Ishida, Masanobu Kawai, and Noboru Mukai, Tokyo, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Chiyoda-ku, Tokyo, Japan
No Drawing. Continuation of abandoned application Ser. No. 4,107, Jan. 19, 1970. This application Apr. 27, 1972, Ser. No. 248,333
Claims priority, application Japan, Feb. 8, 1969, 44/9,004
Int. Cl. A23l *1/22*; C07g *7/02*
U.S. Cl. 426—60 7 Claims

A seasoning agent having a meat-like flavor is produced by the steps of subjecting yeast to decomposition by cell lytic enzymes produced by organisms of the genera Coprinus, Daedaleopsis or Irpex to produce a decomposition liquor, filtering the decomposition liquor to produce a filtrate, adjusting the pH of the filtrate to 5 to 6.5 and heating the filtrate at 40 to 85° C. to produce the seasoning agent.

3,809,781
SOLUBLE COFFEE OF IMPROVED STABILITY AND FLAVOR
Robert F. Howland, New City, N.Y., Michael H. Mansky, Upper Montclair, N.J., and Willie J. Richards, Garnerville, N.Y., assignors to General Foods Corporation, White Plains, N.Y.
No Drawing. Filed Apr. 28, 1972, Ser. No. 248,506
Int. Cl. A23f *1/08*
U.S. Cl. 426—384 7 Claims

Soluble coffee of improved stability during storage is prepared by removing a portion of the aromatics from an aqueous coffee extract, drying the remaining extract, fixing the removed aromatics by mixing them in solution with a fixative and freeze-drying the resultant solution, and adding at least a portion of the fixed aromatics to the dried remaining extract. The soluble coffee powder so prepared is characterized by its lack of off-flavors normally developed during storage.

3,809,782
TUBOCURARINE ANTIGENS AND ANTIBODIES SPECIFIC THEREFOR
Sidney Spector, Livingston, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Mar. 10, 1972, Ser. No. 233,814
Int. Cl. C07g *7/00*
U.S. Cl. 260—121 6 Claims

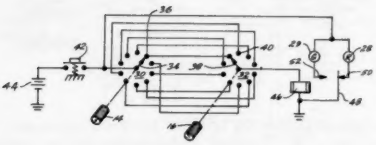
Antigens are prepared by coupling tubocurarine derivatives to immunogenic carrier materials. The coupling is effected via a linking group derived from an amino acid involving an azo link to the tubocurare moiety and an amide linkage to the immunogenic carrier material. In preferred embodiments, proteins are used as the carrier materials. The resulting antigens produce immunological effects when injected into host animals, including the formation of antibodies specific for tubocurarine components in biological fluids.

3,809,783
SILOXANE POLYMERS FOR SOIL-REPELLENT AND SOIL-RELEASE TEXTILE FINISHES
Allen G. Pittman, El Cerrito, and William L. Wasley, Berkeley, both of Calif., assignors to the United States of America as represented by the Secretary of Agriculture
Division of Ser. No. 38,899, May 19, 1970, Pat. No. 3,639,156. This application June 28, 1971, Ser. No. 157,759
Int. Cl. C08f *11/04*
U.S. Cl. 260—46.5 Y 9 Claims

Fluorocarbon silanes are copolymerized with silanes which contain two or more alkyleneoxy groups. The copolymers are useful for application to fibrous materials to provide both soil repellency and soil releasability.

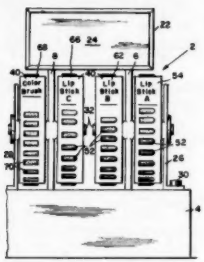
ELECTRICAL

3,809,784
ELECTRICAL APPARATUS PROVIDING SELF-TEACHING ASSISTANCE
Vincent J. Munafo, 19121 Heber St., Glendora, Calif.
Filed Oct. 24, 1972, Ser. No. 299,934
Int. Cl. G09b *7/06*
U.S. Cl. 35—9 B **1 Claim**



There is described an electrical apparatus on which can be mounted any one of a plurality of instructional cards having questions and answers. The apparatus receiving the card has a pair of selector switches arranged to respectively select a question on the card and an answer. After the two switches are set to the selected positions, a push-button is operated lighting one of two lights, indicating whether the correct or a wrong answer has been selected.

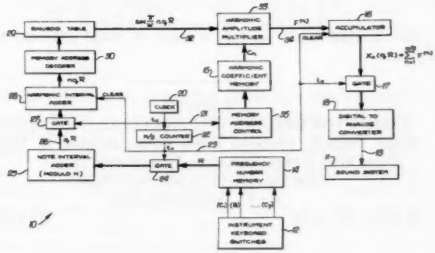
3,809,785
COLOR SELECTOR DEVICE
Anthony J. Calabrese, Malvern; Wayne J. Stettler, and Jan Marie Zwiren, both of Philadelphia, all of Pa., assignors to Menley & James Laboratories, Ltd., Philadelphia, Pa.
Filed Apr. 9, 1973, Ser. No. 349,032
Int. Cl. G09f *1/02*
U.S. Cl. 35—28.3 **4 Claims**



A color selector device has a plurality of drums each mounted for rotation on a substantially horizontal axis and each having a weight fixedly mounted therein to position the drum in a predetermined rotational position and to return the drum to said position from a different rotational position. Each drum carries a plurality of different color indicators on its outer periphery. A mirror is mounted above the drum.

3,809,786
COMPUTOR ORGAN
Ralph Deutsch, Sherman Oaks, Calif., assignor to Deutsch Research Laboratories, Ltd., Sherman Oaks, Calif.
Filed Feb. 14, 1972, Ser. No. 225,883
Int. Cl. G10h *1/06, 5/02*
U.S. Cl. 84—1.01 **29 Claims**

Musical notes are produced in a computor organ or like musical instrument by computing the amplitudes at succesive sample points of a complex waveshape and converting these amplitudes to notes as the computations are carried out. A discrete Fourier algorithm is implemented to compute each amplitude from a stored set of harmonic coefficients C_n and a selected frequency number R, generally a non-integer, establishing the waveshape period. The computations, preferably digital, occur at regular time intervals t_x independent of the waveshape period. At each interval t_x the number R is added to the contents of a harmonic interval adder to specify the waveshape sample point gR, where $g = 1,2,3....$ For each point gR, W individual harmonic component values sin C_n sin $\pi/WBngR$ are calculated, where $n=1,2,3...,$ W. These values are algebraically summed to obtain the waveshape amplitude, which is supplied to a digital-to-analog converter and a sound system for reproduction of the generated musical note.

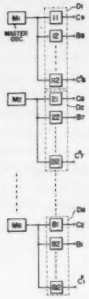


Attack, decay and other note amplitude modulation effects are obtained by programmatically scaling the harmonic coefficients. Foundation and mutation stops are implemented by appropriate selection of the stored harmonic coefficient values. Multiple voices are produced by adding the harmonic coefficients associated with each selected stop. In a polyphonic system, time sharing and multiplexing may be used to calculate separately the sample point amplitudes for each selected note, these amplitudes being combined to reproduce the resultant musical sound.

3,809,787
TONE GENERATOR SYSTEM
Yasunori Mochida, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan
Continuation of Ser. No. 148,746, June 1, 1971, abandoned.
This application Dec. 4, 1972, Ser. No. 311,641
Int. Cl. G10h *1/02, 5/06*
U.S. Cl. 84—1.01 **9 Claims**

For tone generators in an electronic musical instrument, there are provided a plurality of master oscillators, each for a different octave and each being coupled to frequency dividers having different frequency dividing ratios which ratios are respectively determined to divide down the frequency of the master oscillator to pitches of different notes in the intended octave. The different notes in an octave are obtained by frequency dividing the signal of the single master oscillator, and therefore the number of the master oscillators necessary for the instrument becomes very few. The same lettered notes in different octaves are obtained by frequency dividing the

signals of the respectively different master oscillators and are independent in frequency and phase, and therefore there can



be obtained much more of a sense of plural different tone sources.

3,809,788

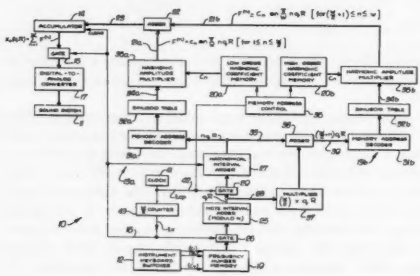
COMPUTOR ORGAN USING PARALLEL PROCESSING

Ralph Deutsch, Sherman Oaks, Calif., assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Oct. 17, 1972, Ser. No. 298,365

Int. Cl. G10h *1/06, 5/02*

U.S. Cl. 84—1.01 **10 Claims**



Parallel processing is used in a computor organ of the type wherein musical notes are produced by computing at regular time intervals the amplitudes at successive points of a musical waveshape, and converting the amplitudes to tones as the computations are carried out. Each amplitude is evaluated by concurrently calculating in parallel channels different subsets of the Fourier components for the same point, then combining the components to obtain the waveshape amplitude. In a typical embodiment, low order harmonic components are calculated in one channel and high order harmonics in another channel; in another embodiment, odd and even harmonics are calculated in separate, parallel channels. A recirculating shift register, shifted in unison with successive component calculations, advantageously stores the harmonic coefficients used in the amplitude calculations.

3,809,789

COMPUTOR ORGAN USING HARMONIC LIMITING

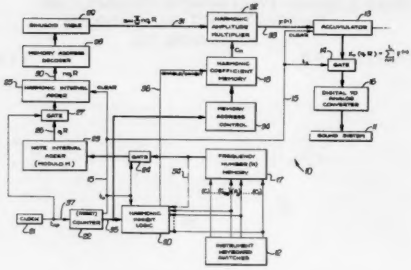
Ralph Deutsch, Sherman Oaks, Calif., assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Dec. 13, 1972, Ser. No. 314,681

Int. Cl. G10h *1/06, 5/02*

U.S. Cl. 84—1.01 **19 Claims**

Harmonic limiting is employed in an electronic musical instrument of the type wherein notes are produced by computing the amplitudes at successive sample points of a musical waveshape and converting these amplitudes to notes as the computations are carried out in real time. Each amplitude is computed by accumulating as many as W individually calculated waveshape discrete Fourier components. In accordance



with the present invention, harmonic inhibit means a are provided for limiting the Fourier components included in each amplitude computation only to those having frequencies below a certain value preferably within the normal human hearing range.

3,809,790

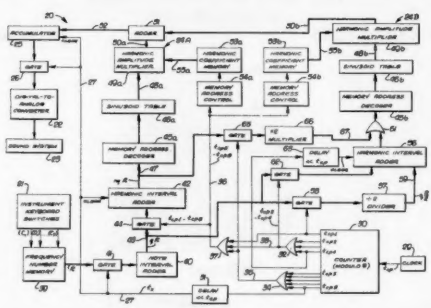
IMPLEMENTATION OF COMBINED FOOTAGE STOPS IN A COMPUTOR ORGAN

Ralph Deutsch, Sherman Oaks, Calif., assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Jan. 31, 1973, Ser. No. 328,302

Int. Cl. G10h *1/06, 5/02*

U.S. Cl. 84—1.01 **12 Claims**



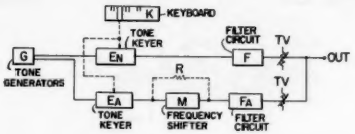
Combined footage stops are implemented in a computor organ of the type wherein musical notes are produced by computing successive sample point amplitudes of a musical waveshape and converting the amplitudes to sound as the computations are performed in real time. Each waveshape amplitude is obtained by evaluating those Fourier components comprising an incomplete set of harmonics for a first footage voice, and the fundamental and several low order odd harmonics of a voice of lower footage. In a preferred embodiment, an incomplete 8-foot harmonic series is employed, together with the first four odd harmonics of a 16-foot series. The 8-foot harmonics correspond in frequency to even harmonics of the 16-foot series. The missing 8-foot components are "reinstated" by the listener's ear. As a result, the combined voice is perceived just as though separate, complete spectra had been used to generate the waveshape. To implement shorter footage stops, certain of the 8-foot harmonics are excluded from the waveshape computation. For combined voices including shorter footage stops, the sum of the harmonic coefficients associated with the concurrently selected stops are used in the component calculations.

3,809,791

ELECTRONIC MUSICAL INSTRUMENT

Yasuji Uchiyama, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Aug. 21, 1972, Ser. No. 282,038
Int. Cl. G10h *1/04*
U.S. Cl. 84—1.24 3 Claims



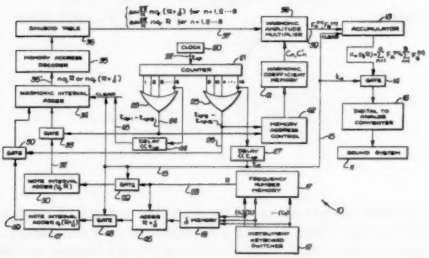
In a keyboard electronic musical instrument having tone generators of frequency divider systems, every key is associated with and controls a plurality of tone keyers which respectively gate tone signals having frequencies being harmonically related with each other. The tone signal gated by one of the keyers is passed through a frequency shifter, while the tone signal gated by the rest of the keyers is not. Among the tone keyers, the above-mentioned one is a keyer for producing an attack signal, while the remainder are keyers for producing a normal lasting signal. Both signals, now being slightly out of harmonic relation, are mixed together and finally transduced into sound by a loudspeaker. The produced sound has subtly fine musical results with a sense of many different tone sources as in an individual--oscillator system instrument.

3,809,792

PRODUCTION OF CELESTE IN A COMPUTOR ORGAN

Ralph Deutsch, Sherman Oaks, Calif., assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jan. 5, 1973, Ser. No. 321,231
Int. Cl. G10h *1/02, 5/02*
U.S. Cl. 84—1.24 16 Claims



Apparatus is disclosed for producing a celeste effect in a computor organ of the type wherein musical notes are generated by computing the amplitudes at successive sample points of a musical waveshape and converting the amplitudes to notes as the computations are carried out in real time. Each amplitude is computed during a regular time interval t_s by individually calculating and combining at least two sets of discrete Fourier components. The first set includes harmonically related components, generally the true pitch fundamental and overtones of each selected note. Components of the second set are offset slightly higher in frequency from those in the first set. The resultant synthesized sound resembles an organ celeste stop wherein two organ pipes, one tuned slightly sharp with respect to the other, are sounded when a note is played.

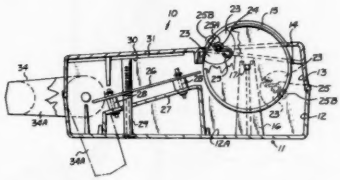
In one illustrative embodiment, each set contains the same number of components, each component in the second set being slightly higher in frequency than the corresponding component of the first set. In another embodiment, the first set includes plural harmonic components, the second set contains only one component slightly offset from the fundamental of the first set.

3,809,793

MUSICAL INSTRUMENT

John V. Joslyn, Bayview Ave., Sag Harbor, L.I., N.Y.

Filed Feb. 5, 1973, Ser. No. 329,436
Int. Cl. G10d *13/08*
U.S. Cl. 84—404 2 Claims



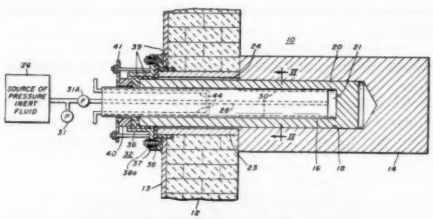
A musical instrument of the Xylophone type which includes a housing having a plurality of rotating wheels, each being mounted for independent rotation with respect to one another, and each including a pivotally connected striker which under the influence of centrifugal force extends radially outwardly to strike an adjacent tone bar. The respective wheels may be color or otherwise coded for use with a similarly coded song card so that a player can sequence the rotation of the respective wheels to sound the specified notes of a given song.

3,809,794

FLUID SHEATHED ELECTRODE LEAD FOR USE IN CORROSIVE ENVIRONMENT

Stanley C. Jacobs, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 178,282, Sept. 7, 1971, Pat. No. 3,745,106. This application Dec. 26, 1972, Ser. No. 318,235
Int. Cl. H01b *17/26*; C22d *3/02*; B01k *3/04*
U.S. Cl. 174—11 BH 7 Claims



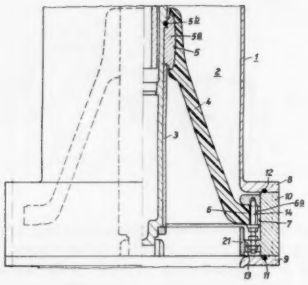
An improved electrode assembly for use in an electrolytic cell perimetrically confining a corrosive fluid environment. Included therein is an electrode element exposed to said environment, at least one low resistance current carrying lead of material susceptible to deleterious attack by corrosive components of such environment having one end traversing a wall of the cell and extending into the electrode element; the other end of the lead is disposed externally of the cell wall, and a plurality of sleeve members are disposed around a portion of the lead traversing the cell wall to inhibit contact of said corrosive components with the exterior shell of said cell and with said lead. Means are provided for maintaining a protective sheath of inert gaseous fluid surrounding the lead member, at a pressure of a magnitude sufficient to repel and thereby prevent contact of approaching corrosive component with the lead member.

3,809,795

MEANS FOR ADJUSTING A CONDUCTOR IN HIGH VOLTAGE ELECTRICAL EQUIPMENT

Willi Olsen, and Dieter Lorenz, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munchen, Germany

Filed Nov. 2, 1972, Ser. No. 303,081
Claims priority, application Germany, Nov. 21, 1971, 2157101
Int. Cl. H01b 9/04
U.S. Cl. 174—28 10 Claims



High voltage electrical equipment using a high voltage electric conductor within a substantially cylindrical metal enclosure forming a space around the conductor has an electrically non-conductive annular spacer holding the conductor centrally within the enclosure, the spacer being shaped and connected in an adjustable manner with the enclosure in a manner permitting the conductor to be moved laterally to position it concentrically within the enclosure.

3,809,796

INDUCTIVE RADIO TRANSMISSION LINE

Kenichi Yoshida, and Masataka Kuroda, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed June 9, 1972, Ser. No. 261,384
Claims priority, application Japan, June 12, 1971, 46-41936
Int. Cl. H01b 11/02
U.S. Cl. 174—33 3 Claims

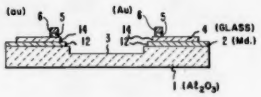
An inductive radio transmission line which is made of a plurality of pairs of two-wire transmission lines, each of which is formed in a plan view configuration upon a series of conductor supports, and each of the conductor supports is made of metal and has a configuration which closely surrounds the conductors of said line. Each pair of conductors of one two-wire line are repeatedly placed on the conductor supports and stretched in parallel therealong with any fixed number of said conductor supports and then transposed. The conductors of the transmission line are thus shielded from the outer field so that they are scarcely affected by the presence of foreign bodies such as rain, snow, soil and others.

3,809,797

SEAL RING COMPOSITIONS AND ELECTRONIC PACKAGES MADE THEREWITH

Charles William McMunn, III, and Takashi Nakayama, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 16, 1971, Ser. No. 199,236
Int. Cl. H05k 1/02
U.S. Cl. 174—52 S 30 Claims



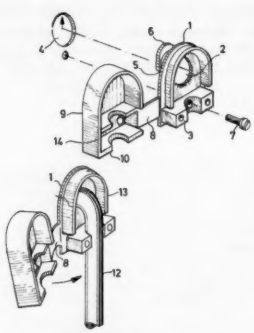
Sealing compositions which can be cofired with dielectric layers to hermetically seal lids over semiconductor devices in electronic packages, said compositions comprising critical proportionate amounts of certain gold powders, certain metal resinates plus an inert vehicle. Optional are certain glass frits. Also electronic packages formed with such compositions and process of forming such packages. Optional features include a second layer of a certain gold powder over that formed from the above resinate-containing composition.

3,809,798

ANGLE TYPE FEEDTHROUGH CABLE CLAMP

Hans Simon, Bruchhausener Strasse, 5463 Unkel (Rhine), Germany

Filed Sept. 6, 1972, Ser. No. 286,842
Int. Cl. H02g 3/02, 3/22
U.S. Cl. 174—59 7 Claims



A cable clamp adapted to be made of one piece of synthetic material has a base bearing a feedthrough hole for placing in registry with a knock-out hole in an appliance housing and has a clamp seat onto which the cable issuing out of the hole is bent. A cover connected to the base with a live hinge bears the upper jaw of the clamp and is adapted to be fastened onto the clamp seat and base by screws. The feedthrough opening in the base has a semi-circular flange protruding through the corresponding opening in the appliance housing. The flange has a lip for engaging the rear surface of the housing.

3,809,799

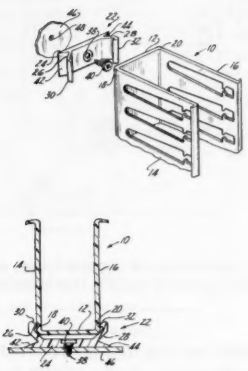
ELECTRICAL WIRING DUCT WITH MOUNTING CLIP

Philip W. Taylor, Howell, Mich., assignor to Taylor Industries, Inc., Howell, Mich.

Filed Sept. 28, 1972, Ser. No. 293,048
Int. Cl. H02g 3/26
U.S. Cl. 174—68 C 6 Claims

A U-shaped electrical wiring duct with a base and generally parallel side walls is provided with grooves on the exterior of

the side walls near the base. A clip, secured to a wall, comprises a bar portion, spaced tab members extending outwardly from the bar portion, and flanges extending one from each of



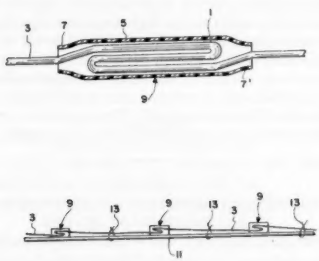
said tab members respectively. The flanges are adapted to snap into the grooves on the wiring duct and thus grip the base of the duct. The tab members are each spaced from an end of the bar portion to define a projection at each end thereof.

3,809,800

MEANS FOR ACCOMMODATING LARGE OVERSTRAIN IN LEAD WIRES

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Carl V. Rumble, Hampton, and Kendall L. Driscoll, Newport News, both of Va.

Filed Apr. 25, 1973, Ser. No. 354,407
Int. Cl. H02g *11/06*; **H01b** *7/00*; **B64d** *17/30*
U.S. Cl. 174—70 R **10 Claims**



An electrical wire along whose length loops are formed at intervals and retained in a plastic capsule that allows unfolding of the loop when tension is exerted on the opposite ends of the wire. The capsule is formed by encompassing each loop with a sleeve of heat shrinkable synthetic plastic material which overlaps the loop and heat shrinking the overlapping portions.

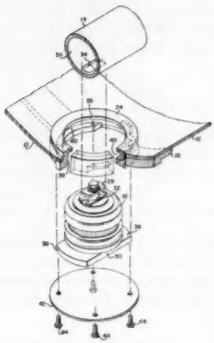
Thus, a length of electrical wire is formed which stores extra lengths of wire in the quantity needed to match the expected stretching of materials or elements such as ropes, cords and the like of high elongation to which the electrical wire may be attached.

3,809,801

POST-TYPE INSULATOR ASSEMBLY FOR ENCLOSED ELECTRIC BUS

Arthur B. Niemoller, and Fred H. Ford, both of Cincinnati, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 24, 1973, Ser. No. 363,764
Int. Cl. H02g *5/06*
U.S. Cl. 174—99 B **12 Claims**



An improved post-type insulator assembly is provided for supporting an elongated hollow electric bus conductor within a surrounding metal house. Access holes or openings are provided in the outer metal housing through which a post-type insulator can longitudinally pass. A slot is provided in the hollow bus conductor through which a retainer attached to the end of the post-type insulator can pass, when the post-type insulator is being positioned to support the hollow bus conductor. Rotation of the post-type insulator a predetermined angle causes the retainer to engage the inner surfaces of the hollow bus conductor and firmly connects the hollow bus conductor to the post-type insulator. Rotation of the post-type insulator through the predetermined angle also positions a portion of the post-type insulator support assembly in a casting which is attached to the outer housing, and prevents movement of the post-type insulator. The casting has an opening which forms the access opening in the outer housing. An access cover is provided to close the access opening. The access opening provided in the outer housing, through the casting, is only of a slightly larger diameter than the insulator used to support the hollow bus conductors. The mounting hardware used to mount the access cover over the access opening also provides a locking function to prevent rotational movement of the post-type insulator after the access cover is attached.

3,809,802

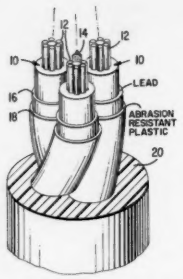
ROUND ELECTRIC CABLE FOR SEVERE ENVIRONMENTAL OPERATION AND METHOD OF MANUFACTURE THEREOF

Stanley Pearson, Trenton, N.J., assignor to Crescent Insulated Wire & Cable Company, Inc., Trenton, N.J.

Filed Nov. 13, 1972, Ser. No. 305,800
Int. Cl. H01b *7/20*
U.S. Cl. 174—103 **5 Claims**

A method is herein provided for making round electrical cable for use under severe environmental conditions including the step of providing a conductor, coated with a layer of insulating material. A lead sheath is applied over the layer of insulating material and a layer of heat resistant, abrasive resistant, protective material, such as a nylon base substance, is extruded onto the outer surface of the lead sheath. The conductor is then twisted with other similar conductors, through a die, and the bundle of mutually twisted conductors is then encased in a nitrile-base jacketing material.

The disclosed round cable generally includes a plurality of mutually twisted, insulated conductors, encased in a nitrile-base jacket. Each insulated conductor generally comprises at least one strand of conductor wire, coated with an electrical



insulating material and a lead sheath enclosing the insulating material. A layer of an abrasive resistant protective material is applied to the outer surface of the lead sheath. Preferably, the protective material consists of a nylon-based relatively pliable substance.

3,809,803

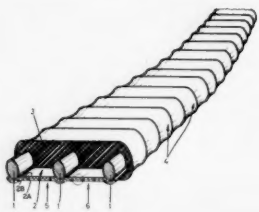
CONDUCTOR FOR CONDUCTING ELECTRIC SIGNALS

Conrad Helmcke, Munchen; Walter Hermann, Weissenfeld, and Peter Kraus, Munich, all of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed Aug. 3, 1972, Ser. No. 277,781

Int. Cl. H01b *7/08*

U.S. Cl. 174—114 R **9 Claims**



Electrically conductive line particularly adapted for effecting measurement of linear distances. A plurality of parallel spaced electrical conductors are provided with means providing conductivity between said conductors throughout the full length thereof which conductivity is, however, of substantially less value than the conductivity of any one of the conductors. Due to the impedance of the conductors, this cross leakage attenuates the signal along the line and hence produces a measurable signal drop in a relatively short distance. This makes possible an accurate and progressive linear measurement.

3,809,804

AUTOMATIC SWITCHING DEVICE FOR EVR PLAYERS

Norboru Okuno, Sennan; Toshiro Kamogawa, Hirakata, and Yoshihiro Okino, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd, Osaka, Japan

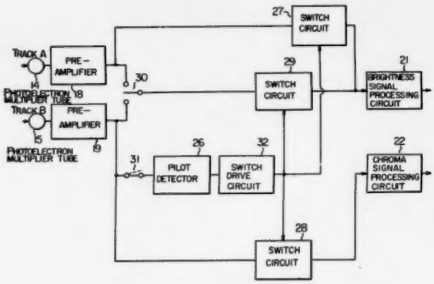
Filed Sept. 22, 1972, Ser. No. 291,272

Claims priority, application Japan, Sept. 23, 1971, 46-87022

Int. Cl. H04n *5/36*

U.S. Cl. 178—5.2 D **9 Claims**

An automatic switching device for automatically switching demodulation modes of an EVR player, for instance a demodulation mode for color reproduction and a demodula-



tion mode for monochromatic reproduction, accordingly as the recorded information of an EVR tape is disclosed.

3,809,805

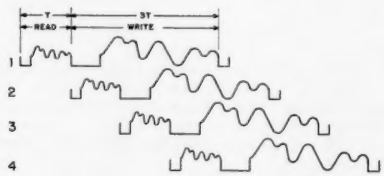
VIDEO BANDWIDTH REDUCTION

Vincent Kasprzak, Auburn, Calif., assignor to Arvin Industries, Inc., Columbus, Ind.

Filed Aug. 25, 1972, Ser. No. 283,806

Int. Cl. H04n *5/78, 7/12*

U.S. Cl. 178—6.6 A **28 Claims**



A high frequency signal is periodically applied to one each of a plurality of variable delay lines which receive and store respective portions of the high frequency signal. While one line is receiving and storing a high frequency signal portion the other previously stored portions are retrieved substantially simultaneously from the other delay lines, with the other delay lines operating in a low speed mode. The high frequency signal is thus continuously converted into a multiplicity of related signals each of lower bandwidth. The sequence is reversed for reconstruction of the original high frequency signal.

3,809,806

BANDING CORRECTION SYSTEM FOR FILM RECORDING APPARATUS

Robert Walker, Stamford, and William Harris, Oxford, both of Conn., assignors to Columbia Broadcasting System Inc., New York, N.Y.

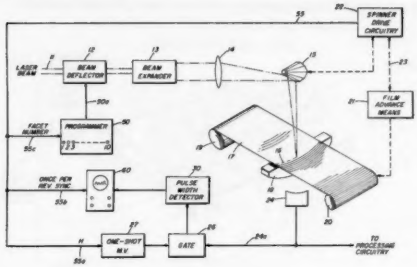
Filed Oct. 18, 1972, Ser. No. 298,607

Int. Cl. G02b *17/00;* **H04n** *5/84*

U.S. Cl. 178—7.6 **5 Claims**

The disclosure pertains to an apparatus for recording an image on a film in a scanned horizontal line pattern with a light beam, the scanned pattern being achieved by reflecting the light beam from a moving surface such as an optical spinner. There is disclosed a subsystem for improving the vertical registration of successive lines in the pattern. Means are provided for sensing the beam position at the beginning of a scanline and for developing a position-indicative signal which varies in accordance with the relative vertical position of the beam. The position-indicative signal is compared to a

predetermined reference signal which is a function of the desired position of the beam and there is generated a correction signal which depends on the comparison. Further means are provided for vertically deflecting the beam in accordance with the correction signal.

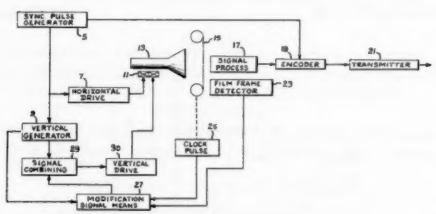


3,809,807

FILM FRAME POSITION DETECTOR

John Francis Bulharowski, Rochester, N.Y., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed July 16, 1970, Ser. No. 55,448
Int. Cl. H04n *5/38*
U.S. Cl. 178—7.2 **3 Claims**



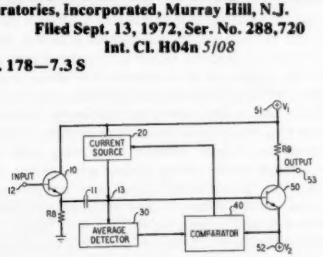
A photographic film scanning system includes an electromechanical transducer contiguous with the film and responsive to the sprocket holes therein for providing electrical signals representative of the positional location of the film frames in a film scanning zone.

3,809,808

VIDEO SYNC SEPARATOR

Lee James Arpin, Lakewood, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 13, 1972, Ser. No. 288,720
Int. Cl. H04n *5/08*
U.S. Cl. 178—7.3 S **2 Claims**



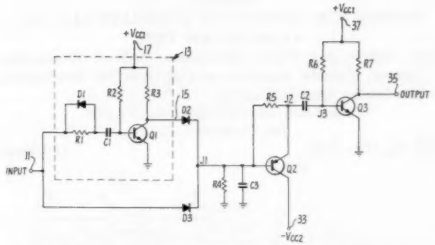
A video signal is coupled by an emitter-follower through a capacitor to the base of a transistor connected in a common emitter configuration with its emitter directly connected to a clamping potential. A potential representing the average magnitude of the video signal is developed by an average detector and coupled to one input of a comparator circuit, a second input of which is connected to the clamping potential. Variations in the average magnitude of the video signal causes variations in a control signal developed by the comparator circuit, which control signal is utilized to vary the amount of current delivered to the plate of the coupling capacitor which is directly connected to the clamping transistor. With the time constant of the average detector set equal to at least one video frame interval, larger currents are provided to the coupling capacitor for larger video signals thereby permitting a wide variation in the magnitude of the video signals that may be coupled to the sync separator.

3,809,809

TECHNIQUE FOR DETECTING LONG DURATION PULSES FROM A TRAIN OF SHORT DURATION PULSES

Nikola Vidovic, Sunnyvale, Calif., assignor to International Video Corporation, Sunnyvale, Calif.

Filed Dec. 13, 1972, Ser. No. 314,734
Int. Cl. H04n *5/10*
U.S. Cl. 178—69.5 TV **8 Claims**



A circuit particularly adapted for detecting the occurrence of vertical sync pulses in a composite television synchronization pulse train. In a first subcircuit horizontal and equalizing pulses are inverted, while the subcircuit acts as a one-shot for the longer pulses in the vertical sync interval. The input and subcircuit output are summed so that cancellation is achieved until the one-shot action has concluded in the vertical sync interval. The remaining portion of the vertical sync interval thus is not cancelled and is used to generate an output pulse that indicates the occurrence of the vertical sync period.

3,809,810

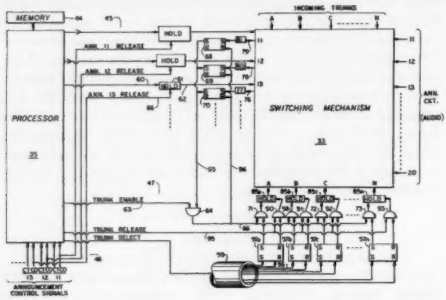
MULTICHANNEL ACCESS SWITCHING SYSTEM

Walter P. Walker, Atlanta; Douglas R. Cobb, Dunwoody, and Frank H. Cofer, Jr., Atlanta, all of Ga., assignors to The Audichron Company, Atlanta, Ga.

Filed Apr. 21, 1972, Ser. No. 246,322
Int. Cl. G09b *5/04*
U.S. Cl. 179—1 B **18 Claims**

Switching system for selective interconnection of message receiving circuits, such as telephone trunk lines, and message delivery circuits, such as recorded message announcement circuits. The system, which operates in conjunction with a conventional telephone switching system, permits a single set of announcement trunks to be dedicated for shared use with multiple message announcement circuits. A unique number code is provided corresponding to each particular message announcement circuit, and the dialled number codes are decoded and then utilized to control the switching interconnection between the particular message announcement circuit and all announcement trunks which are awaiting connection with that particular announcement circuit. The announcement trunks are not dedicated or otherwise restricted to use with a particular message announcement circuit, and so

several message announcement circuits having message load factors which peak at different intervals throughout the day



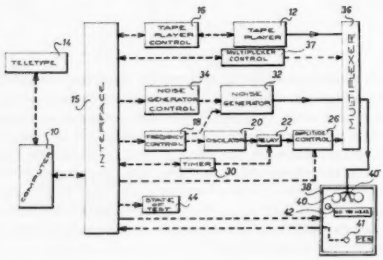
may be used in shared relation with a common group of announcement trunks dedicated to a group of message announcement circuits.

3,809,811

SYSTEM FOR CONDUCTING AUTOMATICALLY AN AUDIOMETRIC TEST

Jules Delisle, and Victor Baillargeon, both of Sherbrooke, Quebec, Canada, assignors to Universite De Sherbrooke, Sherbrooke, Quebec, Canada

Filed Aug. 10, 1972, Ser. No. 279,359
Int. Cl. H04r *29/00*
U.S. Cl. 179—1 N **11 Claims**



The disclosure herein describes a system for conducting automatically an audiometric test using a data processing means, in which are stored a series of tone frequencies, amplitude levels and time periods, and including a circuitry enabling the application of stimuli to a subject. Depending on each response received from the subject in answer to a given tone frequency, the apparatus will (1) continue the test utilizing a different amplitude level for the same tone frequency, (2) register the minimum threshold of the tone frequency, (3) continue the test utilizing a different tone frequency, or (4) register an aberration. The apparatus also enables the application of a vocal test to a subject in which the subject must indicate which word in a series of displayed words was heard.

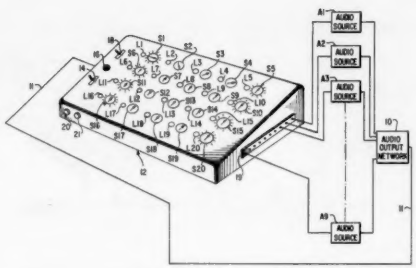
3,809,812

PROGRAMMING SYSTEM

Pryer C. Smith, Sr., P.O. 187, Ulysses, Kans.

Filed Feb. 27, 1973, Ser. No. 336,338
Int. Cl. G09b *5/04*
U.S. Cl. 179—1 B **10 Claims**

A programming system for activating a plurality of audio sources in accordance with a preselected program sequence in which the termination of audio signals from an activated source is detected and, after a predetermined time delay, advances a sequencing network to activate a subsequent audio source. This same operation continues in accordance with a preselected sequence which may be rapidly and simply programmed prior to or during operation.

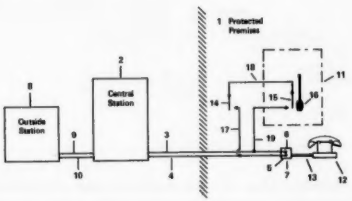


3,809,813

TELEPHONE ALARM SIGNALLING SYSTEM

Preston R. Brown, Box 319, Quogue, N.Y.

Division of Ser. No. 87,267, Nov. 5, 1970, abandoned. This application Dec. 14, 1972, Ser. No. 314,961
Int. Cl. H04q *9/00*
U.S. Cl. 179—5 R **20 Claims**



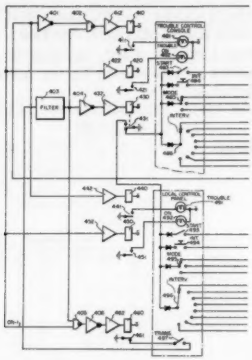
A system for indicating an abnormal condition at premises provided with a telephone subscriber station having a telephone callable from an outside station. The system includes a series connection of (1) a normally open control switch, and (2) a sensor switch which is open when the abnormal condition is not present, but which is closed in response to the presence of an abnormal condition, such as a fire at the premises. The control switch cooperates with the telephone ringer and is closed thereby either intermittently or continuously when the telephone set is ringing. The series connection of the sensor switch and the control switch is connected across the telephone line of the subscriber station to intermittently interrupt the ring back signal heard at the calling station when both switches are closed, without interfering with the ring back signal heard at the calling station when either switch is open. Thus, when the abnormal condition is not present at the premises, and the subscriber station is called, the calling station receives a normal uninterrupted ring back signal, because the sensor switch is open. However, when the abnormal condition is present at the premises, both the control switch and the sensor switch are closed when the ringer at the subscriber station is ringing, and the ring back signal heard at the calling station is interrupted. The interruption may be continuous, as though the receiver of a telephone set at the subscriber station has been picked up.

3,809,814

LOCAL CONTROL PANEL FOR DATA RECORDER

Donald W. McLaughlin, Bolingbrook, Ill., assignor to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.

Filed Dec. 13, 1972, Ser. No. 314,885
Int. Cl. H04m 15/26
U.S. Cl. 179—8 A 8 Claims



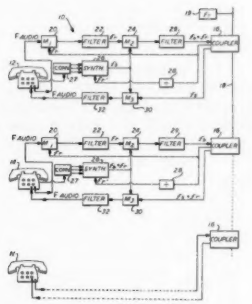
Traffic supervisory equipment for use in a telephone communication system adapted to record call switching data. Control of the recording can be effected by either an associated traffic control console or a local control panel, the two of which are interlocked to provide non-conflicting dual control.

3,809,815

COMMUNICATION SYSTEM UTILIZING FREQUENCY DIVISION MULTIPLEXING TO LINK A PLURALITY OF STATIONS EACH CONTAINING A SWITCHABLE SYNTHESIZER

Joseph Reed, Stamford, and Joseph F. De Lorenzo, Rowayton, both of Conn., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed May 4, 1972, Ser. No. 250,228
Int. Cl. H04j 1/06
U.S. Cl. 179—15 FD 10 Claims



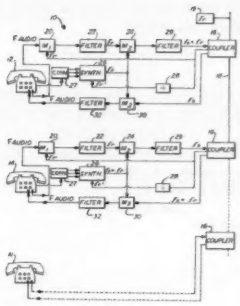
A switchable communications system utilizing frequency division multiplexing is shown for providing communication between a plurality of stations, each including a synthesizer and each operated from a single reference frequency. Each station is assigned a fixed home frequency at which it transmits information. When calling, the synthesizer within the calling station adjusts the transmit frequency of that station to correspond to the receive frequency of the called station, which automatically adjusts the receive frequency of the calling station to correspond to the transmit frequency of the called station. Full duplex transmission is thus permitted between any and all stations within the communications system through the utilization of a wide range acquisition synthesizer within each station.

3,809,816

COMMUNICATION SYSTEM UTILIZING FREQUENCY DIVISION MULTIPLEXING AND A FREQUENCY PLAN THEREFOR

Joseph Reed; Jonas M. Shapiro, both of Stamford; Athanassious Iliakidis, Norwalk, all of Conn., and Anthony Apostolakis, Santa Monica, Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed June 23, 1972, Ser. No. 265,446
Int. Cl. H04j 1/06
U.S. Cl. 179—15 FD 10 Claims



A communications system utilizing frequency division multiplexing is shown for providing switchable communication between any two stations through a frequency plan which uses a single reference frequency throughout the system. Each station is assigned a fixed home frequency at which it receives information and a second fixed home frequency at which it transmits information. When calling, the calling station adjusts its transmit and receive frequencies to correspond to the receive and transmit frequencies of the called station, respectively. Full duplex transmission is thus permitted between any and all stations over a single coaxial cable utilizing a fixed-adjustable paired frequency plan.

3,809,817

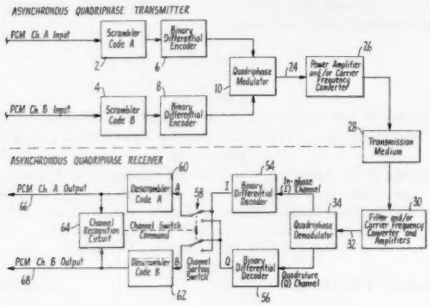
ASYNCHRONOUS QUADRIPHASE COMMUNICATIONS SYSTEM AND METHOD

Walter J. Gill, Saratoga, and James A. Mellenger, Sunnyvale, both of Calif., assignors to Avantek, Inc., Santa Clara, Calif.

Filed Feb. 14, 1972, Ser. No. 225,823
Int. Cl. H04j 3/06
U.S. Cl. 179—15 BS 19 Claims

A communications system and method for transmitting and receiving two independently timed (asynchronous) binary data signals on a quadriphase carrier. The four phase ambiguity ordinarily resulting from quadriphase transmission and reception is overcome by uniquely identifying each input channel, for example, by scrambling. In reception each channel is demodulated and applied to a corresponding descrambler. The descrambler outputs are sequentially examined to recognize any non-random characteristic of the data signals; recognition indicates connections from the demodulator to

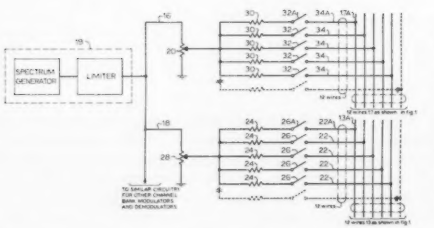
the descrambler in the correct sense. If there is no recognition, the connections are reversed and the scrambler outputs are again examined until recognition is achieved thus providing the original binary data signals.



3,809,818
MEANS AND METHOD FOR TELEPHONE LINE DISCONNECTION IN FREQUENCY DIVISION MULTIPLEXING

Walter Daniel Johnston, Pierrefond, Quebec, Canada, assignor to Bell Canada, Montreal, Quebec, Canada

Filed June 5, 1972, Ser. No. 259,458
Int. Cl. H04j *1/14*
U.S. Cl. 179—15 BY **10 Claims**

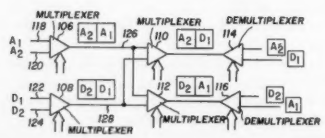


Transmission failure in frequency division multiplexing connected to telephone systems results in the generation of a disconnect tones, one for each carrier, which are simultaneously superimposed on the multiplex link to achieve disconnection of telephone lines and trunks.

3,809,819
TDM SWITCHING APPARATUS

Raymond A. Stephens, Marion, Iowa, assignor to Collins Radio Company, Dallas, Tex.

Filed Dec. 7, 1972, Ser. No. 313,025
Int. Cl. H0q *11/04*
U.S. Cl. 179—15 AQ **2 Claims**

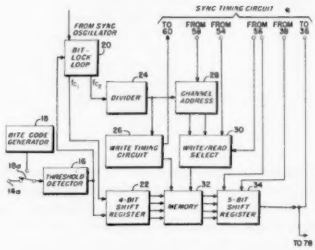


A non-blocking three-stage switch comprising two stages of multiplexing and a final stage of demultiplexing operations. The multiplexing stages utilize devices contacting a plurality of inputs which inputs are connected to a single output in a controlled order. The demultiplexer stage utilizes this operation in reverse to connect a single input to a plurality of outputs in a controlled order.

3,809,820
MULTI-CHANNEL ASYNCHRONOUS TO SYNCHRONOUS CONVERTER

Dean R. Sullivan, Lakeside, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 3, 1973, Ser. No. 347,515
Int. Cl. H04j *3/06*
U.S. Cl. 179—15 BA **6 Claims**

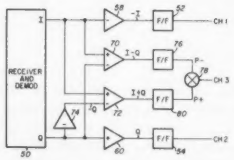


Multi-channel apparatus for error-free translation of asynchronous data channels into a serial data stream. Independent synchronizing circuitry at each channel performs bit timing recovery to allow incoming bits to be sampled and properly interpreted and also stores bits in a manner to absorb bit difference resulting from incoming data rate differences. Common synchronous timing circuitry provides control signals to transfer data synchronously out of a memory device, to prevent interference between asynchronous write and asynchronous read operations, and to multiplex the individual channel outputs in a serial data stream.

3,809,821
THREE-CHANNEL DATA MODEM APPARATUS

William J. Melvin, 2065 Mandarin St., Costa Mesa, Calif.

Division of Ser. No. 187,675, Oct. 8, 1971. This application May 16, 1973, Ser. No. 360,711
Int. Cl. H04l *27/18*
U.S. Cl. 179—15 R **2 Claims**



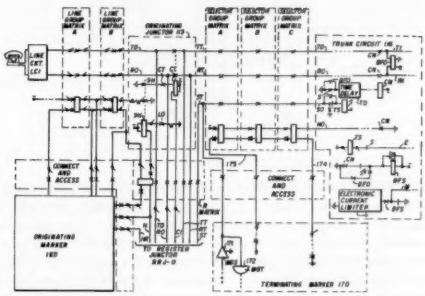
Apparatus for and the method of providing three channel, eight phase data modulation and demodulation whereby the

system may be used for either two or three channels with no detrimental effects in either mode of operation due to the additional circuitry. The invention discloses additional apparatus for connection to a conventional two channel, four phase system to produce a three channel, eight phase system. The coding of the eight phase system modifies the basic phase change of a two channel, four phase system by ±22.5° depending upon the inclusive OR result of the first two channels as compared to the binary logic level of the third channel.

3,809,822
COMMUNICATION SWITCHING SYSTEM INTERLOCK ARRANGEMENT

John W. Eddy, Villa Park, and Sergio E. Puccini, Wood Dale, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Nov. 2, 1972, Ser. No. 303,157
Int. Cl. H04m *3/00*
U.S. Cl. 179—18 E **16 Claims**



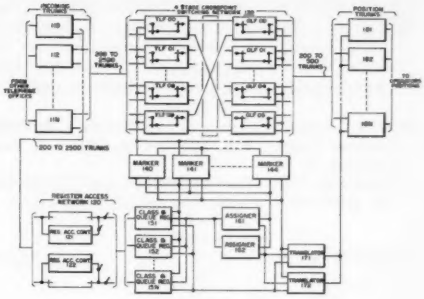
An interlock arrangement for a communication switching system having a switching network controlled by a marker for establishing a path through the switching network between a first supervisory unit, such as a register junctor, and a second supervisory unit, such as a terminating junctor or trunk circuit, includes a switching circuit in the marker for applying a first holding signal to a holding control lead of the path for causing the path to be maintained between the two supervisory units, a switching circuit in the first supervisory unit responsive to the first holding signal to apply a second holding signal to the holding control lead for maintaining the path established, a circuit in the marker for removing subsequently the first holding signal from the holding control lead, and a testing circuit in the marker responsive to the removal of the first holding signal and to the presence of the second holding signal for causing the marker to release, whereby the first supervisory unit maintains the path established to enable the marker to release for servicing other connections through the network.

3,809,823
AUTOMATIC DISTRIBUTION OF SUBSCRIBER ASSISTANCE CALLS

Melvin A. Jacobs, Hinsdale, and Jack W. Taugner, Des Plaines, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Apr. 2, 1973, Ser. No. 347,258
Int. Cl. H04q *3/64*
U.S. Cl. 179—27 D **5 Claims**

A technique for automatic distribution of calls to directory assistance operators' positions. Means are provided for effec-

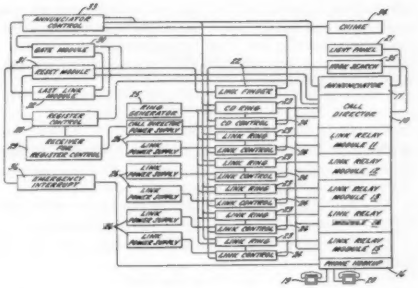


tively equalizing loads among operators and teams of operators and minimizing the effects of load fluctuation.

3,809,824
PRIVATE AUTOMATIC TELEPHONE SYSTEM WITH DIAL AND DIALLESS TELEPHONES

James E. Dahlquist, Elk Grove Village, and Richard J. Medal, Mount Prospect, both of Ill., assignors to Rauland-Borg Corporation, Chicago, Ill.

Filed Mar. 31, 1972, Ser. No. 240,122
Int. Cl. H04q *3/42*
U.S. Cl. 179—37 **26 Claims**



A private automatic telephone system for use in schools and other locations where supervisory control over the use of the telephone system is desired, so that calls between certain telephones cannot be made without the authorization of administrative personnel. The system includes dial and dialless telephones, with the dial telephones being capable of dialing any other telephone within the system in a conventional manner, i.e., the telephone receiver is lifted and the telephone dialed to result in either a ring signal or a busy signal if the called telephone is busy. If a dialless telephone is used to initiate a call, the lifting of its receiver produces a visual indication in an annunciator light panel placed in an area having dial telephones, so that an administrator may respond by dialing the number of the dialless telephone and complete the call. The responding dial telephone may connect one or more additional telephones to the call by momentarily depressing its hook switch, thus enabling the dial telephone to receive dial tone and enable the dialing of the number of the additional telephone and establish a conference call. The administrator may either place his telephone on-hook and occasionally lift the receiver to monitor the call if desired or may permanently disconnect from the conference call by pressing a release but-

ton. The system is capable of providing two or more simultaneous independent calls depending upon the number of links that are provided to connect separate telephones in the system.

3,809,825

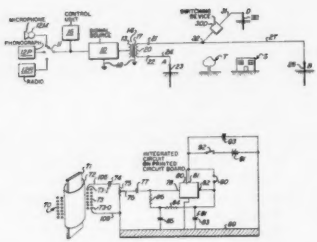
RECEIVER FOR INDUCTIVE COMMUNICATION SYSTEM

Howard A. Schaad, Abingdon, Ill., and Richard L. Randolph, Maryland Heights, Md., assignors to William J. Foley, Galesburg, Ill.

Continuation-in-part of Ser. No. 844,047, July 23, 1969, Pat. No. 3,660,760. This application Apr. 26, 1972, Ser. No. 247,548

Int. Cl. H04b *5/00*

U.S. Cl. 179—82 **4 Claims**



There is disclosed a receiver apparatus for inductive communication systems. A flat high mu metal, core carrying a multi layer coil has an end on the inside layer connected to the input terminal of a low level integrated circuit amplifier and the coil end on the outside layer is connected to ground terminal of the amplifier.

3,809,826

PUNCHED CARD READING TELEPHONE INSTRUMENT

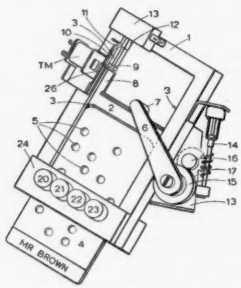
John George Laycock Rhodes, London, England, assignor to Pye Limited, Cambridge, England

Continuation of Ser. No. 122,963, March 10, 1971. This application Apr. 26, 1973, Ser. No. 354,876

Claims priority, application Great Britain, Mar. 10, 1970, 11441/70

Int. Cl. H04m *1/48*

U.S. Cl. 179—90 CS **13 Claims**



A punched card reading telephone instrument wherein a card is ejected at a substantially uniform rate after insertion into the mechanism and is optically read. The encoded putput of the optical reading mechanism is stored in a known push button telephone until the entire card has been read and the entire telephone number has been stored within the push button telephone. Subsequent to the ejection of the card the stored telephone number is transmitted.

3,809,827

MULTIPLE CARTRIDGE TAPE RECORDER/REPRODUCER HEAD SHIFTING ASSEMBLY

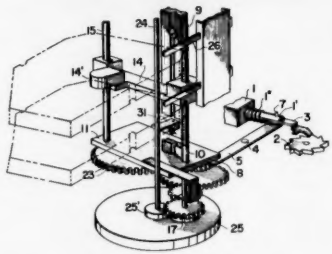
Takashi Oyaba, Yokohama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 7, 1971, Ser. No. 205,575

Claims priority, application Japan, Dec. 7, 1970, 45-121011[U]

Int. Cl. G11b *21/02, 21/08*

U.S. Cl. 360—106 **9 Claims**



A multiple cartridge tape recorder/reproducer supporting a plurality of independent cartridges has a single transducer fixed to a head plate which is mounted to a rotary plate for rotation about the axis of a feed screw passing through the rotary plate and threadably coupled to the head plate for shifting the head plate and thus the transducer head from transducing position and a second rotary shifted head non-transducing position. A friction wheel mounted to the rotary plate moves into contact with a flywheel to drive the feed screw shaft while axially shifting the transducer head from one cartridge to the other subsequent to simultaneous shifting of the pinch roller from the drive capstan for the tapes and movement of the transducer head to non-transducing position. A lock release cam driven through a gear train from the movable friction wheel pivots the lock plate terminating rotation of the feed screw and permitting pivoting of the rotary plate to a first transducing position allowing the pinch roller to contact the capstan and the transducing head to contact the magnetic tape of the new cartridge.

3,809,828

ELECTRET TRANSDUCING DEVICE

Paul O. Haugsjaa, Plainview, N.Y.; Adam Heller, Sharon, Mass.; William F. Nelson, Port Washington, and Anthony Bocchimuzzo, Bronx, both of N.Y., assignors to GTE Laboratories Incorporated, Waltham, Mass.

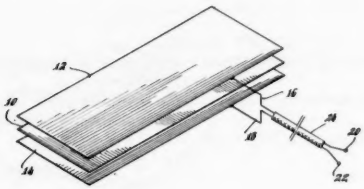
Filed Jan. 17, 1972, Ser. No. 218,101

Int. Cl. H04r *23/00*

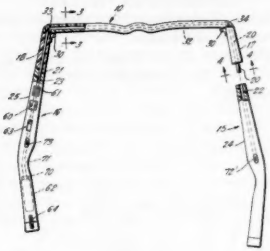
U.S. Cl. 179—100.41 B **1 Claim**

An electret transducer is described which includes an electret formed from a relatively thin elongated body of electrically insulating dielectric material which is polarized for establishing a residual electrostatic field within the body. First and second relatively thin elongated bodies of electrically conductive material are positioned adjacent opposite surfaces of the electret body and extend substantially coextensively with the electret body. The conductive bodies thereby sandwich the electret and provide electrodes for the transducer. This sandwich configuration is formed into a convolute shaped transducer assembly and includes electrical conductors which are coupled to each of the electrodes and between which a

transducer output signal is provided upon mechanical excitation of the convolute shaped transducer assembly. The transducer thus provided comprises a displacement transducer which advantageously can be employed in acoustical detection and reproduction systems.



3,809,829
ACOUSTIC CROS HEARING AID
Walter R. Vignini, Peelskill, and Martin Molloy, Ossining, both of N.Y., assignors to Sonotone Corporation, Elmsford, N.Y.
Filed Jan. 16, 1973, Ser. No. 324,102
Int. Cl. G02c *11/06*
U.S. Cl. 179—107 S **7 Claims**



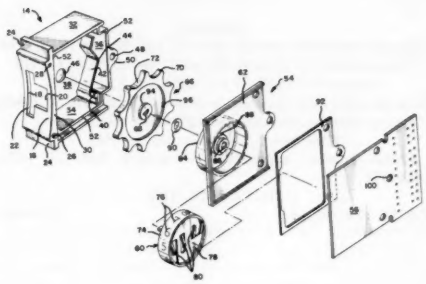
An eyeglass CROS hearing aid having temple bars one of which has the operative elements of a hearing aid and an acoustic passage from the operative temple bar through said temple bar, the eyeglass frame and the other temple bar to either an earpiece mountable on the other temple bar or an acoustic opening for the microphone.

ERRATUM

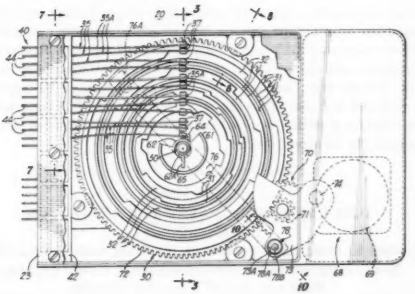
For Class 179—81 see:
Patent No. 3,810,247

3,809,830
SEALED THUMBWHEEL SELECTOR SWITCH
Joseph Larue Lockard, and William Henry Rose, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Continuation-in-part of Ser. No. 255,844, May 22, 1972, abandoned. This application Mar. 12, 1973, Ser. No. 340,414
Int. Cl. H01h *19/58, 9/04*
U.S. Cl. 200—11 TW **20 Claims**

A thumb selector switch structure is disclosed which is particularly suitable for use in corrosive or dusty environments. The selector switch includes a printed circuit panel having an angularly encoded conductive pattern printed thereon. A rotatable contact carrying indicia wheel is rotatably mounted to the printed circuit panel so that the contacts carried by the indicia wheel selectively engage various portions of the angularly encoded printed circuit pattern, thereby producing digital output signals in response to the rotation of the contact carrying wheel. The contact carrying wheel is permanently hermetically sealed to the printed circuit board by means of a clear plastic casing. An actuator wheel is provided for rotating the indicia and contact carrying wheel. A suitable housing having a detent spring mounted therein is provided to enclose the above described structure.



3,809,831
PROGRAM TIMER ASSEMBLY WITH IMPROVED CAM DISC FACE CIRCUMFERENTIAL GROOVES FOR ABRUPT RADIAL DISPLACEMENT
George A. Godwin, and William E. Wagle, both of Bloomington, Ind., assignors to Sarke & Tarsian Inc., Bloomington, Ind.
Filed Mar. 1, 1973, Ser. No. 336,959
Int. Cl. H01h *43/10*
U.S. Cl. 200—38 C **9 Claims**



There is provided a timing device of the type suitable for controlling the cycling of appliances and the like. The timing

device includes an axially restrained cam disc having a plurality of circumferential cam tracks a plurality of switch blades is provided having cam follower means adapted to engage selected ones of the cam tracks. A drive is provided which may be ratcheted to provide for manual overdrive or advance of the cam disc. Moreover a line switch is provided controlled by axially translation of the control shaft. Switching means may be provided for automatically disengaging the line switch upon completion of an operating cycle.

3,809,832

TENSION SUPERVISORY APPARATUS FOR CONVEYOR TRANSPORT SYSTEMS DETECTING BREAKAGE OR MALFUNCTION IN A CABLE OR THE LIKE

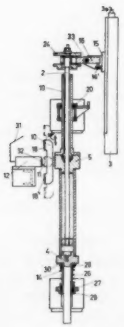
Hans Burger, Schaffhausen, Switzerland, assignor to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

Filed Nov. 1, 1972, Ser. No. 302,981

Claims priority, application Switzerland, Nov. 12, 1971, 16469/71

Int. Cl. B61b *11/02*

U.S. Cl. 200—61.18 **13 Claims**



The cable or chain of a suspension-type conveyor is guided around a tension sheave, which is movable under influence of a suspended weight, spring or the like with change in loading on the cable to maintain the tension constant. A fluid cylinder-piston arrangement is provided, the piston being connected to the movable sheave, for example by being connected to the weight, and the cylinder being filled with hydraulic fluid, on both sides of the piston, the end of the piston being connected together by a bypass, return line which preferably contains a flow constriction. Upon slow movement of the tension sheave, pressure will always equalize on both sides of the piston over the bypass line; sudden jolts, however, cannot be rapidly equalized and also move the fluid cylinder which is connected to operate a switch upon excursion thereof to control operation of the transport system.

3,809,833

DIRECTIONAL SIGNAL WITH CAM SWITCH ACTUATORS

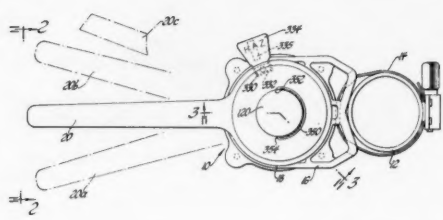
Gerald K. Miller, and Norman A. Rautiola, both of Reed City, Mich., assignors to Nartron Corporation, Reed City, Mich.

Filed Aug. 2, 1972, Ser. No. 277,226

Int. Cl. H01h *21/50, 21/80, 3/42*

U.S. Cl. 200—61.27 **16 Claims**

A switch assembly has an outer housing containing a rotatable detent carrying body, a rotatable cam-carrying body, a relatively fixed electrical contact plate assembly; an outer end cover-like member fixedly secured to the detent body and cam-carrying body also carries an actuator handle which when rotated either clockwise or counter-clockwise causes selective closure of electrical contacts carried by the contact plate assembly to thereby close associated electrical circuitry; the detents carried by the detent-carrying body serve to maintain the components in any selected operating position as well as in a neutral position.



3,809,834

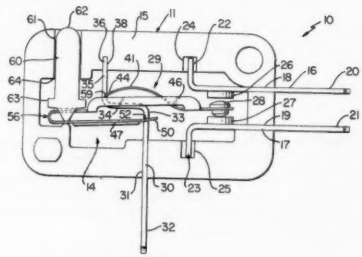
SNAP SWITCH CONSTRUCTION AND SNAP BLADE THEREFOR OR THE LIKE

George M. Hipple, Columbus, Ohio, assignor to Robertshaw Controls Company, Richmond, Va.

Filed Apr. 17, 1972, Ser. No. 244,792

Int. Cl. H01h *13/36*

U.S. Cl. 200—67 D **22 Claims**



A snap switch blade construction for a snap switch having a housing provided with a fixed contact, the snap switch blade comprising a one-piece switch blade having opposed ends. One of the ends of the blade carries a contact to be movable relative to and cooperate with the fixed contact, the other end of the blade being reversely bent to define an elbow of the blade and cooperating with the housing to provide a pivot for the blade. The one end of the blade has a part thereof cooperating with the housing to provide a compression member of the blade that causes the blade to snap between the operating positions thereof. The ends of the blade are rigid adjacent the elbow of the blade so that the elbow and the compression member define the only operating flexible parts of the blade. An actuator engages the part of the elbow of the blade that is defined by the reversely bent end of the blade to

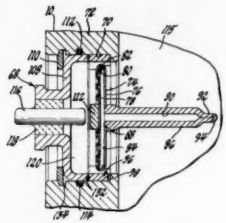
place such elbow under tension when causing movement of the blade from one position thereof to another position thereof.

3,809,835

COMPRESSOR SUPERHEAT SWITCH WITH BELLOWS MOUNTING RING

Roy E. Watt, Brookville, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 7, 1973, Ser. No. 357,593
Int. Cl. H01h 35/32
U.S. Cl. 200—83 N 3 Claims



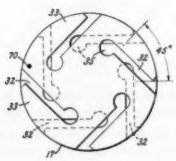
A simple and easily assembled pressure and temperature responsive switch having a bellows type actuator and especially adapted to be used in an automobile air conditioning system. The switch assembly includes a sealed bellows supported within an annular mounting ring which is adapted to be inserted within a recess in the head of the compressor. A cup-shaped housing member is inserted in the recess over the mounting ring and sealed with respect to the surrounding wall of the recess to prevent refrigerant leakage therefrom. The housing member supports an insulated electrical contact which is supported adjacent the mid portion of the bellows to complete an electrical indicator circuit when the bellows expands in response to a predetermined high temperature or low pressure of refrigerant.

3,809,836

VACUUM-TYPE ELECTRIC CIRCUIT INTERRUPTER

Donald W. Crouch, Newtown Square, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Dec. 21, 1972, Ser. No. 317,222
Int. Cl. H01h 33/66
U.S. Cl. 200—144 B 7 Claims



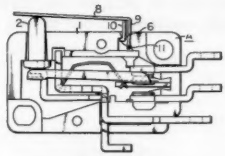
A high current vacuum interrupter (rated to interrupt currents greater than 16,000 amperes r.m.s.) comprises (1) a pair of large disc-shaped contacts slotted to provide an arc-revolving action and (2) a tubular metal shield closely surrounding the contacts. Localized melting of the shield by an inter-contact arc is reduced by angularly displacing the contacts with respect to each other so that the starting points of slots in the contacts are angularly offset by substantially the maximum possible amount.

3,809,837

MICROSWITCH WITH READILY REMOVABLE LEAF SPRING ACTUATING MEANS

Hideoki Yoshioka, Osaka, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Sept. 25, 1972, Ser. No. 291,896
Claims priority, application Japan, Sept. 30, 1971, 46-89995; Nov. 25, 1971, 46-110782
Int. Cl. H01h 3/02, 3/04
U.S. Cl. 200—153 T 6 Claims



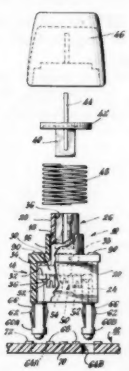
A push button switch including an actuator made up of an operating leg and a mounting leg in "L" formation, the mounting leg being insertable into a recess in the switch body. The mounting leg is longitudinally slit to define separate spring portions which press snugly against opposed walls in the recess. One of the spring portions is formed into a hook which engages a presented edge on the corresponding wall of the recess to keep the actuator captive, but it can be easily removed by pressing the spring portions toward one another. The presented edge is preferably sharp so as to provide a fulcrum for bodily rocking movement of the actuator. The opposed wall surface is preferably crowned to accommodate the rocking movement and the crown preferably has a flat top opposite the sharp edge so that the actuator is resiliently detented into a central reference condition.

3,809,838

MODULAR PUSH BUTTON SWITCH ASSEMBLY MOUNTED ON PRINTED CIRCUIT BOARD

John Coppola, Trumbull, Conn., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Nov. 1, 1971, Ser. No. 194,741
Int. Cl. H01h 3/12, 9/02
U.S. Cl. 200—159 R 9 Claims



A key switch consisting of a switch mounted on a circuit board. The switch has at least three contact elements mounted on a plunger which is normally biased away from the circuit board. When pressure is applied to a key mounted on the side of the plunger opposite the contacts, the contact elements are lowered into engagement with corresponding contact points on the circuit board permitting a coded output to be

generated. If one of the contact points on the board is a common point and the contact element on the plunger adapted to engage the common point is recessed, a simple and effective means is provided for preventing spurious outputs from the switch.

3,809,839

MOMENTARY SWITCH WITH SERPENTINE MOVABLE AND COIL SPRING STATIONARY CONTACTS

Stanley Beddoe, Fareham, England, assignor to Plessey Handel und Investments A.G., Zug, Switzerland

Filed Jan. 26, 1973, Ser. No. 323,012

Claims priority, application Great Britain, Jan. 19, 1972, 2682/72

Int. Cl. H01h *13/50*

U.S. Cl. 200—160 **1 Claim**

An electric switch of the push-button type affording a momentary switching action comprising a spring-biased push-button which in response to the depression thereof causes a cam surface to bear against a springing moving contact member initially to produce bowing of the member so that it makes electrical contact with a fixed contact member in the form of a coil spring and thereafter during the depression of the push-button to permit the compressive forces in the contact member to be released suddenly by snap deflection of the member as it rides over the cam surface thereby to interrupt electrical contact with the member by the straightening of the moving contact member.

3,809,840

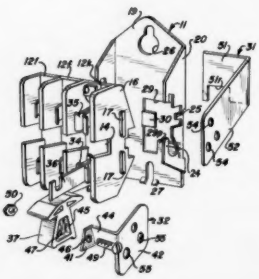
MOUNTING BRACKET AND LOCKING MEANS FOR ELECTRICAL TERMINAL BLOCK DEVICES

C. Allan Schurr, Shaker Heights, Ohio, assignor to Square D. Company, Park Ridge, Ill.

Division of Ser. No. 253,753, May 16, 1972. This application June 6, 1973, Ser. No. 367,605

Int. Cl. H01h *9/22*

U.S. Cl. 200—321 **4 Claims**



A mounting bracket holds one or more standard electrical terminal block devices for mounting on a wall or panel without requiring use of a mounting or terminal strip. Cooperating handle lock-off means may be used for locking a terminal block knife switch in its open position.

3,809,841

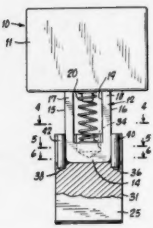
BUTTON FOR ELECTRICAL SWITCH OR THE LIKE

Luis Edgar Rico, 98-17 Horace Harding Exwy., Rego Park, N.Y.

Filed June 27, 1973, Ser. No. 374,258

Int. Cl. H01h *3/12*

U.S. Cl. 200—329 **6 Claims**



For use with an electrical switch having a manually movable actuating blade, a button comprising a solid metal block having a slot in one end for receiving the blade, and cylindrical nylon insert members press-fitted into recesses formed in the block along the sides of the slot for engagement with the side edges of the blade, the insert members being compressed by the blade so as to hold the button securely on the blade.

3,809,842

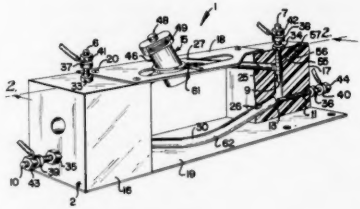
LEVEL SENSITIVE SWITCH

Emmet G. Slusher, c/o Hydral Ladder, Inc., P.O. Box 472, Higginsville, Mo.

Filed Feb. 26, 1973, Ser. No. 336,037

Int. Cl. H01h *29/00*

U.S. Cl. 200—221 **5 Claims**



A level sensitive switch comprised of a body member having a closed loop flow channel filled with two immiscible liquids, one being electrically conductive and the other being electrically non-conductive. First terminals are mounted in the body and have ends extending into the channel at opposite ends thereof and are adjustable in relation to the level of the conductive fluid and a second terminal is mounted in the body member and has an end in electrical contact with the conductive liquid whereby tilting of the body member effects an electrical circuit between a first terminal and the second terminal. The speed of the liquid movement through the channel is adjustable by a dampening apparatus associated with the channel. An expansion chamber communicates with the channel and compensates for volume changes of the liquid to assure that the channel is maintained full of the liquids.

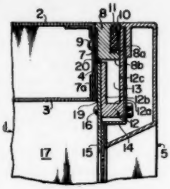
ERRATA

For Classes 219—10 and 219—279 see:
Patents Nos. 3,810,248 and 3,810,249

3,809,843
MICROWAVE HEATING APPARATUS

Takeshi Takayama, Kawasaki, Japan, assignor to The General Corporation, Kawasaki-shi, Japan

Filed May 28, 1971, Ser. No. 147,974
Claims priority, application Japan, June 1, 1970, 45-53825
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 **9 Claims**

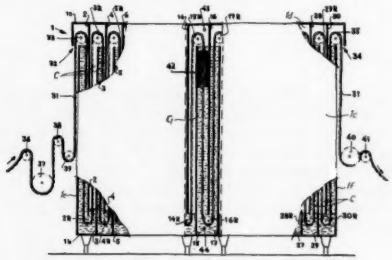


A microwave oven is disclosed having an electromagnetic energy seal constituted by the oven enclosure and its associated door, each of which comprises a complementary stepped structure defining a pair of planes. One of the stepped structure is formed with a cavity therein having a plurality of walls and a terminating wall and which has an opening opposite to the step portion of the other stepped structure. The terminating wall of the cavity is spaced substantially ¼ wavelength from the middle point intermediate the step portion and the opening and is spaced an integral multiple of ½ wavelength from the boundary of the oven interior.

3,809,844
METHOD AND APPARATUS FOR TREATING HEAT-SENSITIVE PRODUCTS

Lennart Arvid Stenstrom, Huddinge, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Sept. 1, 1971, Ser. No. 176,967
Claims priority, application Sweden, Sept. 8, 1970, 12154/70
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 **9 Claims**

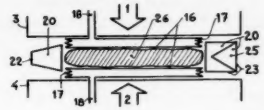


Each unit of a heat-sensitive product is contacted directly or indirectly with a cooling medium so that the unit acquires a condition in which a surface layer thereof has a lower temperature than its inner portions. The product unit is then heated, by electro-manetic energy of at least microwave frequency, from this condition to substantially the desired sterilizing or pasteurizing temperature in a medium having a temperature which will permit such heating. In this way, a substantially uniform heat treatment effect is obtained in the product units.

3,809,845
HEATING OF PRODUCTS IN ELECTRO-MAGNETIC FIELD

Lennart Arvid Stenstrom, Huddinge, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Sept. 1, 1971, Ser. No. 176,968
Claims priority, application Sweden, Sept. 8, 1970, 12155/70
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 **15 Claims**

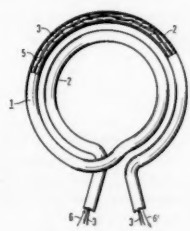


Each product unit, enclosed in a casing which is transparent to electro-magnetic energy, is heated by passing it through an electro-magnetic field of at least microwave frequency while closely surrounding the unit (at least along its boundaries as seen in a plane perpendicular to the main direction of applying the field against the unit) with a fluid medium having a dielectric constant which is at least one-half the dielectric constant of the product unit in the field. The electro-magnetic heating of each unit is terminated when its interior reaches a predetermined temperature; and the temperature of the surrounding medium is controlled to provide the product unit near its surface with a temperature which, upon such termination, is substantially said predetermined temperature.

3,809,846
INDUCTION HEATING COIL FOR A ZONE HEATING PROCESS

Werner Baumgartner; Wolfgang Keller, and Manfred Schnoeller, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 22, 1973, Ser. No. 343,882
Claims priority, application Germany, Apr. 11, 1972, 2217407
Int. Cl. H05b 5/08
U.S. Cl. 219—10.79 **12 Claims**



An induction heating coil which is detachably mounted on a holding member of an induction heating device having a chamber receiving at least a portion of the coil, which device is adapted for use in a process of zone melting of a rod of material, characterized by the coil comprising a tube of insulating glass-like material, such as glass or quartz, which is both heat resistant and vacuum-tight, receiving a metal conductor therein. Each end of the coil is provided with an intermediate member of a good conducting material which member is electrically connected to the conductor and is sealed in a vacuum-

tight relationship with both the tube of the coil and the holding member of the device. Preferably, a cooling agent such as water is circulated through the tube to cool the metal conductor during a heating operation. To form the seal with the intermediate member, the tube is either provided with a metalized end that is soldered to the intermediate member or the intermediate member is provided with a ring of silicon rubber which is compressed between the tube and intermediate member by an appropriate clamping device.

3,809,847

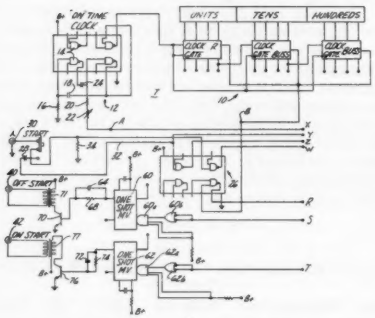
METHOD AND APPARATUS FOR ELECTRICAL DISCHARGE MACHINING

Oliver A. Bell, Jr., Mooresville, N.C., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed Dec. 14, 1972, Ser. No. 314,997

Int. Cl. B23k *9/16*

U.S. Cl. 219—69 P **50 Claims**



Method and apparatus of the digitally controlled type for providing machining power pulses of predetermined on-off time duration. Included in the circuit are separate on-time generators and off-time generators, together with counter means for presetting incrementally the time of operation of each generator. Included in the circuit is a means for providing a start pulse to enable the operation of the on-time generator in accordance with the time of initial gap breakdown.

3,809,848

DIGITALLY CONTROLLED POWER SUPPLY FOR ELECTRICAL DISCHARGE MACHINING APPARATUS

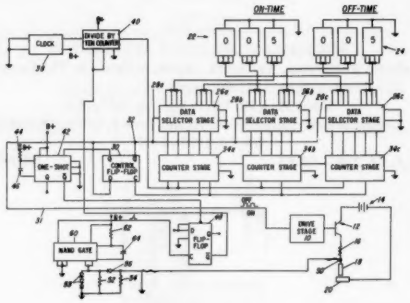
Oliver A. Bell, Jr., Mooresville, N.C., assignor to Colt Industries Operating Corp., New York, N.Y.

Continuation-in-part of Ser. No. 314,997, Dec. 14, 1972. This application Mar. 16, 1973, Ser. No. 341,981

Int. Cl. B23k *9/16*

U.S. Cl. 219—69 C **24 Claims**

A digitally controlled power supply for providing machining power pulses of predetermined ON-OFF time duration. Included in the power supply circuit are separately presettable ON time and OFF time switches. A single counter is used for controlling in a precise manner the duration of both ON time and OFF time. Intermediate the ON-OFF time selection switches and the counter there is provided a data selector stage for enabling the connection and countdown of either the ON time or OFF time switches. Also included in the control circuit is the means for providing a pulse responsive to gap



break-down at the beginning of each individual machining power pulse to enable the operation of the ON time switch and the associated ON time counter stage.

3,809,849

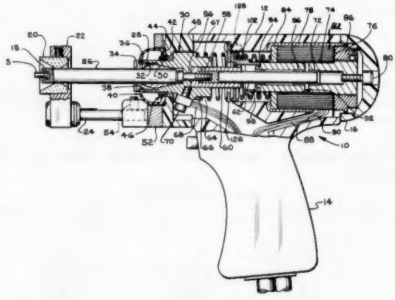
WELDING TOOL

Steve Spisak, Elyria, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed June 7, 1973, Ser. No. 367,853

Int. Cl. B23k *9/20*

U.S. Cl. 219—98 **9 Claims**



An improved welding tool for welding studs to workpieces by a drawn-arc welding technique is provided. A lifting mechanism for the welding tool provides a stronger grip and a more uniform amount of over-travel of the chuck assembly. This is made possible by the design of a lifting hook and ring which enables the use of a larger spring for the lifting mechanism with the spring engaging the lifting ring near its periphery.

3,809,850

PLASMA ARC POWER SYSTEM FOR WELDING

John F. Saenger, Jr., Yorktown Heights, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

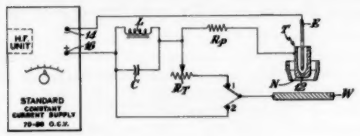
Filed May 17, 1972, Ser. No. 254,093

Int. Cl. B23k *9/00*

U.S. Cl. 219—121 P **4 Claims**

A plasma arc power supply system for work-in-circuit welding over an extended current range of between .1 amperes to

at least 100 amperes wherein the main arc current control circuit includes a variable potentiometer independent from the



pilot arc current control circuit such that the main arc current may be varied, particularly below 15 amperes, without affecting the pilot arc.

3,809,851

ELECTRIC IRONING PRESS

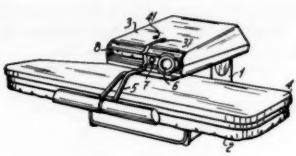
Pierre Aeschlimann, Geneva; Marcel Fresard, Petit-Lancy, and Antonio Jimenez, Geneva, all of Switzerland, assignors to Mefina S.A., Fribourg, Switzerland

Filed Dec. 8, 1972, Ser. No. 313,441

Claims priority, application Switzerland, Feb. 24, 1972, 2630/72; Mar. 8, 1972, 3489/72

Int. Cl. H05b *1/00*

U.S. Cl. 219—243 **6 Claims**



An ironing press wherein the heating plate suspended to a pivoting arm is adapted to be lowered onto and raised above the ironing area, and wherein a hand-operable lock may be rocked into a position wherein a bolt carried by it engages a groove in the arm so as to lock the lever in the position it assumes inside the groove when it urges the arm downwardly. Furthermore, the lowering of the arm acts mechanically through the lever or through said lock on an electric circuit so as to disconnect the latter from the heating means which it energizes inside the heating plate and to connect it with an alarm circuit. A delay system is advantageously incorporated with said circuit to delay said switching operation a few seconds after the lowering of the arm and plate.

3,809,852

ELECTRIC DISCHARGE MACHINE WITH MECHANISM FOR ORBITING THE ELECTRODE ON A POLYGONAL PATH

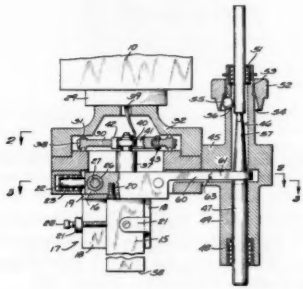
John M. Weber, 630 Colgate Rd., Colgate, Wis.

Continuation-in-part of Ser. No. 138,888, April 30, 1971, abandoned. This application Nov. 16, 1972, Ser. No. 307,323

Int. Cl. B23k *9/16*

U.S. Cl. 219—69 V **9 Claims**

Electrical discharge machine electrode holder, drive and control mechanism for orbiting the electrode on a regular polygonal path with straight sides and angular corners transverse to its path of advance with respect to a workpiece. The control apparatus gradually reduces the size of the orbit path in the course of electrode advance. This eliminates the need for more than one electrode as the workpiece cavity deepens.



All rough and finished cuts may be made with the same electrode. The electrode is mounted on a shuttle block with drive means for intermittently driving the block and electrode with rectilinear motion along the straight sides of the polygonal path and with intervening dwell in the corners of the polygonal path.

3,809,853

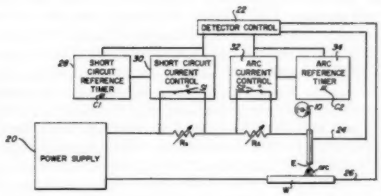
METHOD FOR SHORT CIRCUIT METAL TRANSFER ARC WELDING

August Frederick Manz, Union, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Aug. 24, 1972, Ser. No. 283,343

Int. Cl. B23k *9/10*

U.S. Cl. 219—137 **3 Claims**



The method and system of the present invention minimizes weld spatter through control of the short circuit current and through control over the short circuit and arc time intervals.

3,809,854

ELECTRICALLY CONDUCTIVE FUSER BLANKET

James F. Sanders, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

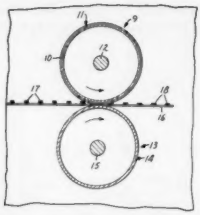
Filed Mar. 22, 1973, Ser. No. 343,702

Int. Cl. H05b *1/00*

U.S. Cl. 219—216 **9 Claims**

A composite article suitable for use as a fuser blanket comprising a dimensionally stable substrate having bonded to one

surface thereof, in ascending order, a resiliently compressible electrically conductive elastomer layer and a thin resiliently



compressible silicone elastomer layer. The blanket is especially well suited for use in copier systems wherein electrostatic charging of photoconductive coated paper is utilized.

3,809,855

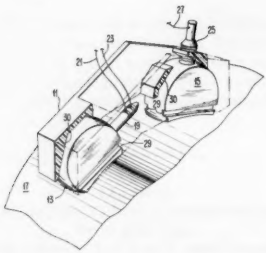
THERMAL SENSING APPARATUS

Danny Marvin Neal, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 12, 1973, Ser. No. 369,369

Int. Cl. H05b *1/00;* **G03g** *15/70*

U.S. Cl. 219—216 **7 Claims**



A contact type thermal sensing apparatus for a hot roll fusing unit includes a fail-safe detector to insure intimate contact between the thermal transducer and the monitored roll surface. The fail-safe detector also insures intimate contact between an over temperature sensing device and the monitored roll surface. The thermal transducer includes a thermally and electrically conductive contact which is held against the surface of the rotating conductive fuser roll. The output of the transducer is utilized to control the amount of heat supplied to the roll. A second thermally and electrically conductive contact is held against the surface of the rotating conductive roll and includes a thermal fuse which prevents further heat application to the roll should the surface thereof become overheated. The fail-safe detector comprises an electrical continuity circuit which includes the two contacts and the conductive roll. If either of the contacts becomes separated from the roll, electrical continuity therebetween is broken and the detector output prevents further heat application to the roll. The fail-safe detector thus insures that the transducer and thermal fuse contacts are intimately contacting the roll thereby preventing excessive overheating of the roll occasioned by the loss of such contact.

3,809,856

WATER HEATER

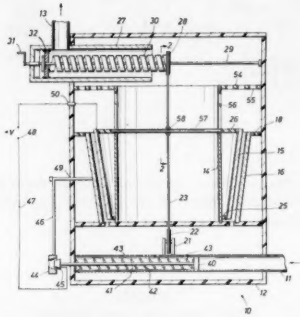
Robert E. Wills, San Antonio, Tex., assignor to Richard R. Wynn, Palm Beach, Fla.

Filed Oct. 20, 1972, Ser. No. 299,296

Int. Cl. H05b *3/60*

U.S. Cl. 219—286 **8 Claims**

A demand type water heater incorporates a closed chamber having a water inlet and a water outlet. The chamber houses a pair of concentric conical electrodes arranged in spaced relation to define a water flow path therebetween. One electrode is fixed while the other is arranged for axial movement relative to the first to adjust the spacing therebetween. A rotary thermostat coil is arranged adjacent the chamber outlet for measuring the temperature of the water flowing from the outlet



and manipulates a mechanism for automatically adjust the electrode spacing to control the termperature of the water delivered from the chamber. The mechanism includes a pulley rotated by the thermostat and connected to the movable electrode by a flexible linkage which converts the rotary motion of the pulley into linear axial movement of the movable electrode.

3,809,857

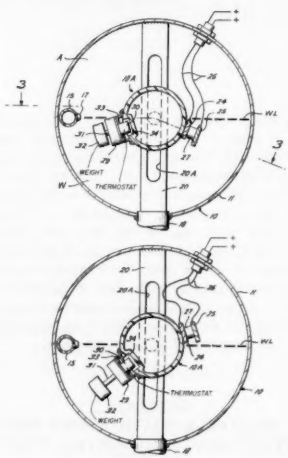
TEMPERATURE CONTROL SYSTEM FOR AN ELECTRODE TYPE LIQUID HEATER

Andrew H. Muhl, 2109 Huldy, Houston, Tex.

Filed Jan. 26, 1973, Ser. No. 326,959

Int. Cl. H05b *3/60*

U.S. Cl. 219—286 **9 Claims**



An electrode type liquid heater is disclosed which, in one embodiment, includes a tank through which a liquid to be heated, such as water, is passed. A heating assembly including heating electrodes for heating the liquid is placed in the tank and such assembly is movable to move the electrodes into and out of the liquid responsive to shifting of the center of gravity

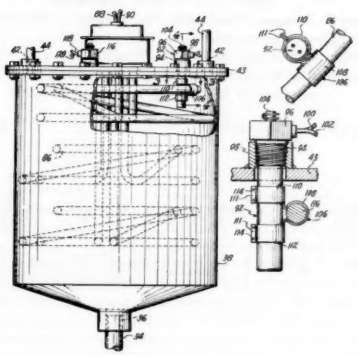
of the assembly. Such shifting is accomplished by a thermostat moving a mass carried by the assembly. The thermostat responds to the temperature of the liquid in the tank to move the mass in one direction to cause movement of the heating electrodes into the liquid for heating, and in another direction to cause movement of the electrodes out of the liquid when a desired liquid temperature is reached. In another embodiment, means are also provided to change the spacing between the electrodes including a thermostat which functions to move an outer electrode farther away from an inner electrode in response to an increase in liquid temperature after liquid flow through the heater stops. This causes the electrodes to move deeper into the body of water to a cooler zone to reduce current flow.

3,809,858

LIQUID HEATING TANK WITH SAFETY CONTROL

Weldon C. Boggs, Tampa, Fla., assignor to Food Research & Equipment Company, Tampa, Fla.

Division of Ser. No. 41,327, May 28, 1970, Pat. No. 3,688,683.
This application Apr. 17, 1972, Ser. No. 244,701
Int. Cl. H05b *1/02, 3/82*
U.S. Cl. 219—331 **5 Claims**



A liquid heating tank contains a convoluted heating element or grid having a portion extending transversely to the cylindrical housing of a safety thermostat switch mounted in the tank. A unitary metallic thermal cut-out clip mechanically and thermally connects the heating element the thermostat switch housing to assure rapid heat transfer from the heating element to the thermostat switch. The clip includes an H-shaped sheet metal stamping bent to form a pair of spaced substantially cylindrical portions which engage the thermostat switch housing an a U-shaped portion between the spaced cylindrical portions which engages the heating element. The thermostat switch is connected in series with the heating element to interrupt current flow to the grid in the event the liquid in the tank is overheated, or to quickly open the circuit to the grid in the event that no liquid or insufficient liquid is present in the tank.

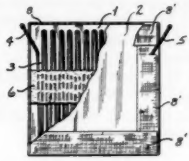
3,809,859

INFRARED EMITTER

Harold D. Wells, St. Louis, Mo., assignor to Black Body Corporation, Fenton, Mo.

Filed Jan. 8, 1973, Ser. No. 321,929
Int. Cl. H05b *3/28;* **H01c** *1/00*
U.S. Cl. 219—345 **5 Claims**

An infrared emitter constituting a panel comprising a pair of sheets of refractory material, a heating element in the form of a continuous wire presented between said sheets and secured thereto by a narrow anchoring strip extending preferably across the central zone of said element. The remaining portions of said wire being unencumbered for expansion and contraction. A dielectric woven mesh-type refractory cover is



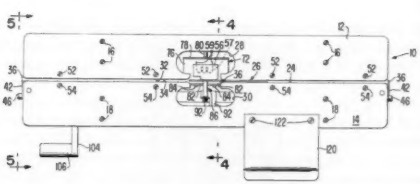
provided for tying the components into a flat panel and with the end portions of the heating element extending rearwardly through said panel for engagement to a convenient source.

3,809,860

DIE FRAME SUPPORT WITH HEATER ELEMENT

John C. Diepeveen, 1737 Kimberly Dr., Sunnyvale, Calif.

Filed Mar. 16, 1973, Ser. No. 342,012
Int. Cl. F27d *11/02;* **H01t** *43/00*
U.S. Cl. 219—385 **12 Claims**



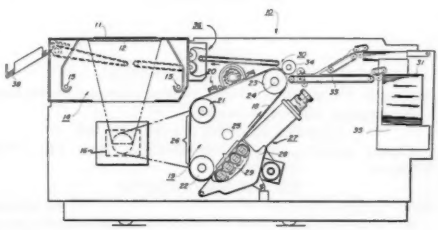
A support for positioning a die support frame for movement in a generally vertical plane past a heater element carried by the support. A generally horizontal rail is adjustably mounted on the support below the path of travel of the frame so that the support is suitable for use with frames of different heights. The support has a clamping finger shiftably mounted thereon and biased toward the heater element for clamping a portion of a die frame against the heater element to thereby heat the frame portion so as to allow a semiconductor chip to be bonded thereto.

3,809,861

REPRODUCTION MACHINE FUSER ASSEMBLY

Oskar J. Bruan, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 26, 1973, Ser. No. 335,983
Int. Cl. B21b *27/06;* **G03g** *15/20*
U.S. Cl. 219—469 **3 Claims**



An electrostatographic type reproduction machine having a fuser for fixing developed images on the copy material, the fuser having cooperating heated and pressure rollers. The

pressure roller is supported for movement away from the other roller to permit the rollers to be separated and the fuser unloaded. For this purpose, the pressure roller is carried in a pivotable frame driveable by cams into physical contact with the heated roller. A spring type return driver, which is loaded on movement of the pressure roller into contact with the heated roller, serves, when unlatched, to rapidly drive the fuser rollers apart. To reduce noise and shock on the fuser and related parts occasioned by release of the latch and unwinding of the spring drive, a viscous dampener is provided to retard separating movement of the fuser rollers.

3,809,862

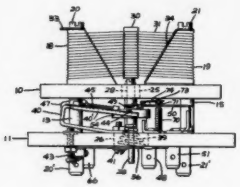
OVEN TEMPERATURE CONTROL

Russell T. Simmons, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 182,453, Sept. 21, 1971. This application Oct. 16, 1972, Ser. No. 297,977

Int. Cl. H05b *1/02*

U.S. Cl. 219—512 **28 Claims**



A system for controlling the temperature of air in an oven. The system has heater means for heating the oven air, switching means for energizing and de-energizing the heater means, and a thermal-to-mechanical transducer including a spring biased taut wire disposed within the oven in thermal contact with the air. Coupling means connects means for coupling the thermal-to-mechanical transducer with the switching means whereby the heater means may be energized and de-energized in response to changes in the temperature of the air within the oven about the thermal-to-mechanical transducer. An electrical circuit for controlling the temperature of the oven and a method for operating the oven within a predetermined temperature range are also disclosed.

3,809,863

ARTICLE CODING SYSTEM

Anders B. Oberg, Jakobsberg, Sweden, assignor to Svenska Dataregister AB, Solna, Sweden

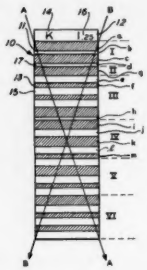
Filed Oct. 22, 1965, Ser. No. 500,814

Claims priority, application Sweden, June 14, 1965, 7790/65

Int. Cl. G06k *7/10, 19/06*

U.S. Cl. 235—61.11 E **14 Claims**

An article coding system is provided which includes, in its preferred embodiment, a light sensing pen used in conjunction with a record bearing media. The article coding is such that there are indicia thereon having first and second dimensions and first and second reflectivity. These indicia are combined such that the wider dimension indicia form signals of two types, indicating two binary states, and the narrow dimension indicia are combined with opposite polarity indicia of larger dimension to provide a third signal, when used in combination with a light sensing device, for timing purposes.



3,809,864

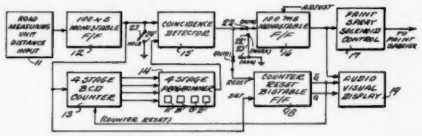
DISTANCE EVENT MARKER

Harry R. Sampey, Vanderbilt, Pa., assignor to Pentron Industries, Inc., Vanderbilt, Pa.

Continuation-in-part of Ser. No. 194,401, Nov. 11, 1971, and a continuation-in-part of Ser. No. 245,432, April 19, 1972. This application July 10, 1972, Ser. No. 270,300

Int. Cl. G06m *3/02*

U.S. Cl. 235—92 DN **20 Claims**



The recording apparatus shown herein periodically records events as a function of distance traversed from a selected starting point. The system generates a plurality of input pulses, each one of which indicates the traverse of a selected unit distance, while a programmable counter periodically produces an output upon the occurrence of a selected programmable number of pulses thereby indicating a desired interval of traversed distance. A recording device such as a paint sprayer responds to the output of the programmable counter for recording the occurrence of the output at the desired interval of traversed distance.

3,809,865

COMPUTER TERMINAL PLOTTING APPARATUS AND METHOD

Frank N. Dimeo, Philadelphia, Pa., assignor to Academic Associates, Inc., Audubon, Pa.

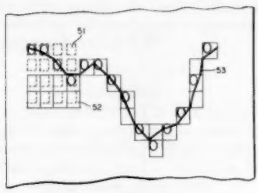
Continuation-in-part of Ser. No. 79,907, Oct. 12, 1970, abandoned. This application Jan. 27, 1972, Ser. No. 221,237

Int. Cl. G06f *15/20*

U.S. Cl. 235—151 **7 Claims**

In a conventional computer terminal device for printing out data from a digital computer, a type vehicle having straight line characters of varying slopes and intercepts which is easily adapted to replace or fit over the conventional alphanumeric ball, cylinder or type-track vehicle, for printing a straight line approximation of graphical information. The information from which the graph is derived, already available in the computer, is operated upon by a stored program to cause the type

vehicle to print, for each data point, a straight line segment conveying optimum information with respect to the position



and waveform derivatives to provide a continuous plot of output data.

3,809,866

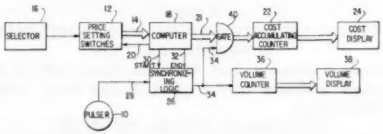
COMPUTING SYSTEM

John Tregay Scoville, Greensboro, N.C., assignor to Gilbert & Barker Manufacturing Company, Greensboro, N.C.

Filed June 6, 1973, Ser. No. 367,476

Int. Cl. G06f *15/56, 7/52*

U.S. Cl. 235—151.34 **17 Claims**



Embodiments of a computing system are disclosed which have particular utility in computing the cost of fuel, such as gasoline, as a function of the fuel volume dispensed. Specifically, the computer is designed to be free-running in that its cyclic generation of pulses representative of the established unit volume price of the fuel is independent of the volume of fuel which is actually dispensed or the rate of dispensing.

A pulser is used which generates a pulse for each incremental volume of fuel dispensed, and a synchronizing circuit receives and synchronizes each of the asynchronous pulses from the pulser with a cycle of the computer. Once synchronization occurs, the price pulses generated during that single computer cycle are passed to an accumulating counter and display device.

3,809,867

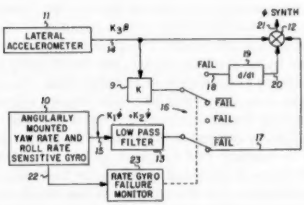
SYNTHESIS OF BANK AND PITCH SIGNALS UTILIZING RATE AND ACCELERATION INPUT PARAMETERS

Edwin R. Hattendorf, Mission Viejo, Calif., assignor to Collins Radio Company, Dallas, Tex.

Filed Dec. 18, 1972, Ser. No. 316,214

Int. Cl. G06g *7/78*

U.S. Cl. 235—150.2 **7 Claims**



A signal development means for synthesizing bank and pitch attitude signals from rate gyro and accelerometer inputs.

3,809,868

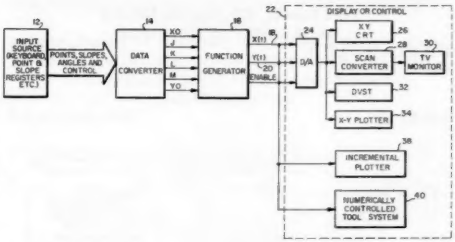
SYSTEM FOR GENERATING ORTHOGONAL CONTROL SIGNALS TO PRODUCE CURVILINEAR MOTION

Luis F. Villalobos, Waltham; Allen A. Harano, Watertown, and Richard H. Breinlinger, Concord, all of Mass., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation-in-part of Ser. No. 106,108, Jan. 13, 1971. This application May 16, 1972, Ser. No. 253,891

Int. Cl. H01j *29/70*

U.S. Cl. 235—151 **31 Claims**



A system for producing orthogonal control signals for display or tool control purposes. The orthogonal control signals are generated in response to received point and slope data for each of a plurality of curve sections. The generated control signals produce curve strokes which are a variable geometric portion of an ellipse that is constrained by the received point and slope data. In generating the orthogonal control signals a set of four parameters are generated as intermediate controls. The four parameters are readily transformed to produce rotation, scaling or other operations, or are economically stored in memory as part of an instruction set for producing general or predetermined characters, symbols and graphic images from linked curve sections. A sequence of curve sections may be pieced together with smooth transitions free of slope discontinuities.

3,809,869

METHOD AND DEVICE FOR MONITORING THE PRODUCTION PROCESS OF AUTOMATIC YARN WINDING MACHINES

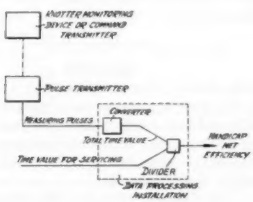
Gregor Gebald, Rheydt, Germany, assignor to W. Schlofhorst & Co., Monchengladbach, Germany

Filed June 29, 1970, Ser. No. 50,124

Claims priority, application Germany, June 27, 1969, 1932549

Int. Cl. G06f *15/36;* **D01h** *13/32*

U.S. Cl. 235—151.3 **4 Claims**



Method of monitoring the production process of automatic winding machines includes forming and indicating, in predetermined time intervals, a handicap net efficiency from action of at least one of the winding stations of the winding

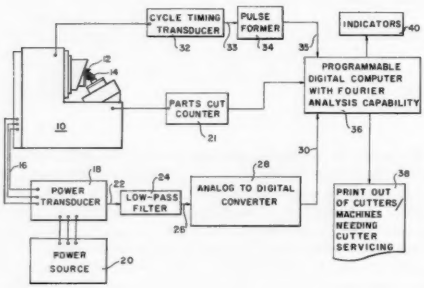
machine, and an actual net efficiency actually resulting from running and shutdown of the winding machine, and system for carrying out the foregoing method.

3,809,870

METHOD AND APPARATUS FOR MONITORING CONDITION OF CUTTING BLADES

Ronald E. Auble, West Henrietta, and Gary J. Kimmet, Rochester, both of N.Y., assignors to The Gleason Works, Rochester, N.Y.

Filed June 8, 1972, Ser. No. 260,875
Int. Cl. G01n *3/58*; G06f *15/20*
U.S. Cl. 235—151.3 **31 Claims**



Method and apparatus for monitoring the condition of a cutter on a cutting machine while it is being used and for indicating when the cutter wear rate has increased sufficiently to economically require removal for replacement and/or servicing. During at least a portion of an actual cutting operation on the machine, the power being consumed by the cutting machine drive motor is monitored and a frequency spectrum of the monitored power consumption is obtained therefrom. At least part of this power consumption frequency spectrum is then integrated to provide a wear rate index value (called a "wear number") which, when compared with previous wear rate index values, may be used as an indication of the relative wear rate for the corresponding cutter. Both an analog embodiment and a combination analog and digital embodiment of apparatus are disclosed for performing the method. To minimize statistical fluctuations, provisions are also made for averaging over several different measurement or sampling periods. An exemplary set of rules is given for processing the wear index values and determining whether or not cutter wear is sufficient to warrant removing the cutter for re-sharpening and/or other servicing.

3,809,871

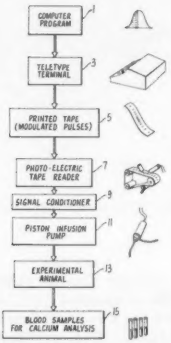
PROGRAMMABLE PHYSIOLOGICAL INFUSION

Wayne H. Howard, Mountain View; Donald R. Young, Los Altos Hills, and Richard R. Adachi, Menlo Park, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 1, 1972, Ser. No. 311,175
Int. Cl. G06f *15/42*; A61m *5/14*
U.S. Cl. 235—151.3 **5 Claims**

A programmable physiological infusion device and method are provided wherein a program source, such as a paper tape, is used to actuate an infusion pump in accordance with a desired program. The system is particularly applicable for dispensing calcium in a variety of waveforms.

The invention described herein was made by employees of the United States Government and may be manufactured and



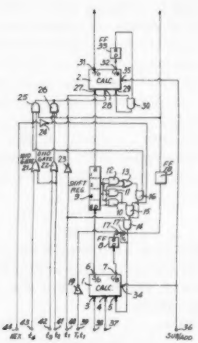
used by or for the Government for Governmental purposes without the payment of any royalties thereon or therefor.

3,809,872

TIME CALCULATOR WITH MIXED RADIX SERIAL ADDER/SUBTRACTION

Katsumi Yamamura, and Mitsuhiro Goto, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Feb. 16, 1972, Ser. No. 226,921
Claims priority, application Japan, Feb. 17, 1971, 46-6891
Int. Cl. G06f *7/50*
U.S. Cl. 235—170 **3 Claims**



A time calculating device characterized in that hours and minutes and perhaps seconds are directly set, times are added or subtracted, and the result of this calculation is obtained in hours, minutes and seconds. The times may also be multiplied or divided by an arbitrary figure, the result being obtained in hours, minutes and seconds or in other units. The time calculating apparatus comprises first and second calculators, the first calculator being adapted to receive and add or subtract two time figures and produce a result. The second calculator is adapted to receive and combine this result with a further figure. A means is provided coupling the first calculator to the second calculator for the transfer of the result to the latter. This means is responsive to the result and to a hexadic-decimal control signal for generating a decimal or hexadic correction signal which is transmitted to the second calculator as the aforesaid further figure for combination with the result.

The time figures can be expressed as series of pulses and the aforesaid means includes a shift register to convert the result to parallel signals, there being provided a plurality of gates coupled to the shift register to detect when hexadic and decimal corrections are necessary and to generate an indicating signal for indicating the same.

3,809,873

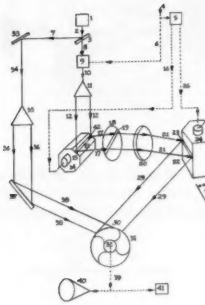
OPTICAL PROCESSOR FOR CONVOLUTION FILTERING

Carl N. Klahr, 678 Cedar Lawn Ave., Lawrence, N.Y.

Continuation-in-part of Ser. No. 157,445, June 28, 1971, abandoned. This application Nov. 3, 1972, Ser. No. 303,313

Int. Cl. G06g *7/19, 9/00*

U.S. Cl. 235—181 **11 Claims**



This invention comprises apparatus for optical processing of two dimensional convolution integrals of a signal function with a filter function. It makes use of specific adaptations of an optical processor not requiring input storage medium, denoted OPWISM. When the filter function is available as a two dimensional spatially varying optical filter, a specific category of OPWISM apparatus is utilized to produce the convolution integral. When the filter function is available as an electronic signal, the convolution integral can be produced from a specific combination of OPWISM apparatus.

3,809,874

DEVICE FOR CALCULATING THE MEAN VALUE OF A SUCCESSION OF DATA

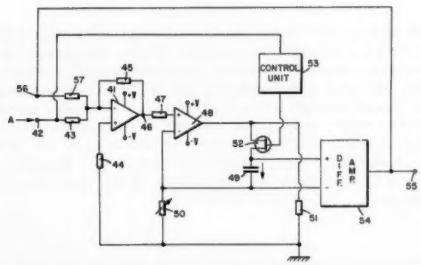
Mario Pozzetti, and Claudio Mordini, both of Bologna, Italy, assignors to Finike Italiana Marposs- Soc. In Accomandita Semplice di Mario Possati & Co., Bentivoglio, Italy

Filed July 21, 1972, Ser. No. 273,712

Claims priority, application Italy, July 30, 1971, 3490/71

Int. Cl. G06g *7/18*

U.S. Cl. 235—183 **5 Claims**



A device for calculating the mean value of a succession of data including a storage capacitor memory element for storing the mean value of a succession of input data, and a control element connected to the storage capacitor for controlling the charging and discharging of the capacitor, the control element also applying a predetermined percentage of the last data piece to the memory element and discharging the same percentage of the mean value previously stored in the memory element.

3,809,875

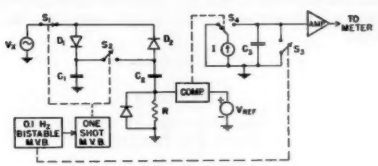
FAST RESPONDING ALTERNATING CURRENT VOLTMETER HAVING AN OUTPUT THAT IS LINEAR IN DECIBELS

James A. Sprowl, 141 Greenbay Rd., Wilmette, Ill.

Division of Ser. No. 34,772, May 5, 1970, Pat. No. 3,676,661. This application July 3, 1972, Ser. No. 268,535

Int. Cl. G06g *7/24*

U.S. Cl. 235—197 **11 Claims**



A series of variable gain amplifiers connect an alternating current signal input to a rectifier and log conversion circuit. The rectifier portion of the circuit charges one capacitor to a level which corresponds to the signal positive peak level and charges another capacitor to a level which corresponds to the signal negative peak level. The log conversion portion periodically interconnects the capacitors and a resistor into a loop circuit and measures the time it takes for current flow through the resistor to decay down to a predetermined reference level. This time measurement is proportional to the logarithm of the peak-to-peak signal level and may therefore be displayed on a meter or other suitable output display device that is linearly calibrated in decibels. The gain of the variable gain amplifiers is varied as is necessary to handle varying input signal magnitudes, and the meter reading is corrected to compensate for such changes in gain. The resulting voltmeter may be designed to have a flat frequency response down to 20 cycles per second and may still accurately depict rapid changes in signal amplitude, such as the fluctuations of a human speech signal waveform.

3,809,876

APPARATUS FOR THE GENERATION OF BESSEL FUNCTION SIGNALS

George W. Byram, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

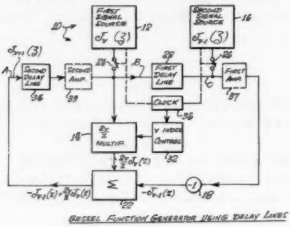
Filed Aug. 31, 1973, Ser. No. 393,685

Int. Cl. G06g *7/26*

U.S. Cl. 235—197 **5 Claims**

Apparatus for the generation of Bessel function signals $J_\nu(z)$ of the first kind, of constant argument z and successive integral order ν, comprising a first signal source capable of generating signals of arbitrary amplitude $J_\nu(z)$, where z is a constant. Means are connectable to the signal source for multiplying the values of $J_\nu(z)$ by the quantity $(2_\nu/z)$. A second signal source is capable of generating signals of amplitude $J_{\nu-1}(z)$. An inverter is connected to, and inverts a signal at, the output of the second signal source. The transit time of the $J_\nu(z)$ signal traversing the multiplying means is substantially equal to the transit time of the $J_{\nu-1}(z)$ signal traversing the inverter. The apparatus further comprises a summing circuit, whose two inputs are the output of the mul-

tiplying means, $(2\nu/z)\,J_{\nu}(z)$, and the output of the inverter $-J_{\nu-1}(z)$, the output of the summing circuit thereby being $(2\nu/z)\,J_{\nu}(z) - J_{\nu-1}(z)$, which is equal to $J_{\nu+1}$.



After the first and second signal sources are once energized, means are provided so that the action becomes automatically recursive, without the necessity of again energizing the signal sources.

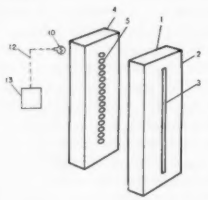
ERRATUM

For Class 240—51 see:
Patent No. 3,810,085

3,809,877
INDICATOR POINTER

Michael Kwong, Montreal, Quebec, Canada, assignor to Canadian Marconi Company, Montreal, Quebec, Canada

Filed Feb. 16, 1973, Ser. No. 333,405
Claims priority, application Canada, May 31, 1972, 143813
Int. Cl. G01d *11/28*
U.S. Cl. 240—1 LP **3 Claims**



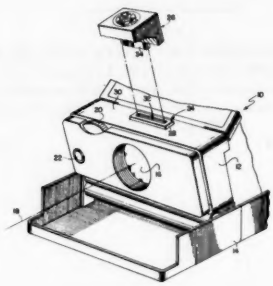
Apparatus for providing an expanding or contracting line of light for use as a pointer in an analog display device. The apparatus comprises a strip of fused fibre optic material housed in an opaque plate, and a light plate, comprising a series of light bulbs in intimate contact with the back side of the opaque plate. In one embodiment, the light bulbs are directly behind the strip of fibre optic material, while in another embodiment the light bulbs are off-set in alternating arrangement with respect to the fibre optic material. An embodiment wherein only every second bulb is activated, to thereby give a dotted effect, is also taught.

3,809,878
NOVEL FLASH CUBE ADAPTER

Edison R. Brandt, Boca Raton, Fla., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 246,807, April 24, 1972, abandoned. This application Feb. 23, 1973, Ser. No. 335,170
Int. Cl. G03b *15/02, 15/03*
U.S. Cl. 95—11 L **14 Claims**

A flash adapter for use in conjunction with a photographic camera including a flash unit entrance slot having a plurality of electrical contacts contained therein. The adapter includes a connector blade which, when inserted into the flash unit entrance slot instructs the camera's exposure control circuit to

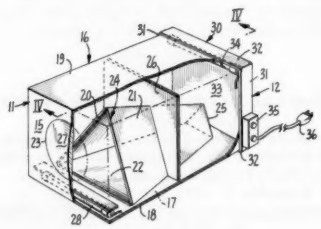


change from its ambient mode to its flash mode. When inserted, the blade makes electrical connection between the electrical contacts and a source of illumination mounted upon the flash adapter.

3,809,879
MACHINE FOR CREATING AND VIEWING KALEIDOSCOPE IMAGES

Hector Gonzalez, 745 Hillcrest Dr., Felton, Calif.

Filed Nov. 24, 1972, Ser. No. 309,467
Int. Cl. F21p *5/04*
U.S. Cl. 240—3.1 **10 Claims**



Equipment for creating illuminated images in kaleidoscopic form from a miscellany of materials whether arranged at random or geometrically, whether presented statically, continuously changing or intermittently moving, where the subjects are viewed through a mirrored truncated pyramidal tunnel having a wider opening at the viewing end than at the gathering end, where galleries present the objects to be viewed, and in which such objects are directly illuminated, stopped or moved in accordance with the control of the viewer or the operator.

ERRATUM

For Class 240—6 see:
Patent No. 3,810,250

3,809,880

ILLUMINATING UNIT FOR USE ON MOTOR VEHICLES

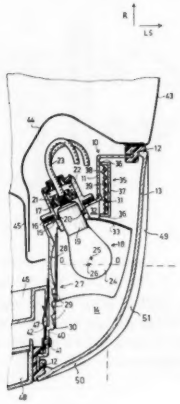
Hans Daumueller, Marbach, and Heinz Kretschmer, Hofen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 20, 1973, Ser. No. 343,144

Claims priority, application Germany, Mar. 23, 1972, 2214161

Int. Cl. F21v *21/00*; B60g *1/00*

U.S. Cl. 240—8.2 **12 Claims**



An illuminating unit which is particularly adaptable for use on motor vehicles has a housing including a wall which is at least partly transparent. Reflectors in the housing reflect light to the transparent parts of the wall, the reflected light then travelling to the exterior of the housing. A single filament in the housing is so positioned that light emitted thereby impinges on the reflectors and is reflected to all transparent parts of the wall.

3,809,881

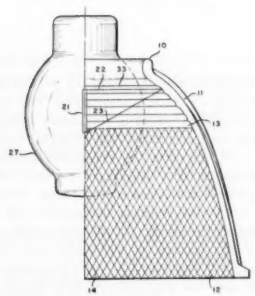
PRISMATIC REFLECTORS

Dale E. Welty, Newark, Ohio, assignor to Holophane Company, Inc., New York, N.Y.

Filed July 17, 1972, Ser. No. 272,312

Int. Cl. F21v *7/00*

U.S. Cl. 240—106 R **12 Claims**



Prismatic reflectors for use with clear light sources in which spiral flutes are disposed over at least a lower portion of the interior surface. The flutes run in two directions to form a plurality of diamond shaped areas for spreading light incident thereon in both horizontal and vertical directions. Double faced prisms are provided over a top portion of the interior surface of the reflector for the purpose of causing a predetermined amount of light to be reflected to the nadir of the reflector.

3,809,882

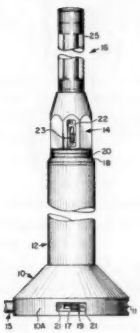
LIGHTING DEVICE

Harold B. Wetmore, Needham, Mass., assignor to Unique Devices Engineering & Consulting Corp., Waltham, Mass.

Filed Jan. 20, 1971, Ser. No. 107,960

Int. Cl. F21l *9/00*, *15/08*

U.S. Cl. 240—10.6 CH **12 Claims**



The device is portable, may be comfortably held in the hand, and employs a screw-in fluorescent light source that is powered from one or more conventional rechargeable batteries through a drive circuit. The batteries and drive circuit are housed within the device and a slide switch or the like on the device is actuable to electrically connect and disconnect the batteries to the drive circuit. The fluorescent source has a protective tube extending thereabout. The device also includes a base upon which the device normally rests. Two receptacles are provided in the base for receiving an AC and DC plug for the purpose of recharging the batteries, respectively, from a conventional AC outlet or from an automobile battery, for example. A second slide switch is provided on the base for selecting either a "charge/on" condition or an "off" condition.

ERRATUM

For Class 240—40 see:
Patent No. 3,809,321

3,809,883

UNIVERSAL TROUBLE LIGHT SUPPORT

Charles M. Goodwin, Rt. No. 2, Mount Vernon, Ohio

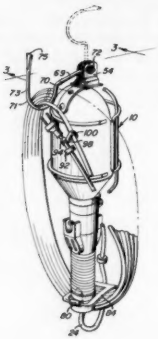
Filed June 12, 1972, Ser. No. 261,679

Int. Cl. F21v *15/00*, *21/00*

U.S. Cl. 240—54 A **12 Claims**

A trouble or drop light construction is provided and includes an elongated handle having an endwise outwardly opening electrical socket at one end for receiving the base of an electric light bulb therein and an elongated laterally opening shield supported from one side of the socket end of the handle opening toward the opposite side. The outer end of the shield includes a transverse end wall as is conventional and the end wall has a mount supported therefrom for angular displacement about an axis generally aligned with the longitudinal axis of the handle and a suspension hook has its base end oscillatably supported from the mount for angular displacement about an axis extending transversely of the hook and

disposed generally normal to the axis of rotation of the mount. The hook is swingable between a laterally opening position and a laterally projecting position with the hook opening endwise outwardly of the end of the shield remote from the handle. Further, the end of the handle remote from the shield includes a laterally outwardly projecting member extending outwardly from the handle in a direction opposite to the direction in which the laterally projecting hook extends and the laterally outwardly projecting member and hook may be utilized as members spaced longitudinally of the trouble light about which the cord of the trouble light may be wrapped when not in use.



3,809,884

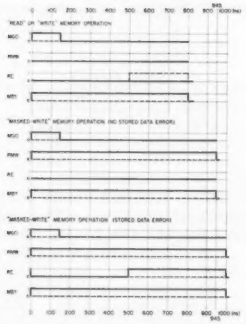
APPARATUS AND METHOD FOR A VARIABLE MEMORY CYCLE IN A DATA PROCESSING UNIT

Chester M. Nibby, Billerica; John C. Manton, Marlboro, and John L. Curley, Sudbury, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Nov. 15, 1972, Ser. No. 306,757

Int. Cl. G06f *11/00, 13/00;* **G11c** *7/00*

U.S. Cl. 340—172.5 **20 Claims**



Apparatus and method for providing a variable memory cycle in a memory module connected to a data processing unit. The operation being performed in the memory module causes a clock to establish a memory cycle interval determined by the particular memory module operation. The memory module is inaccessible to the data processing unit only for a period of time necessary for completion of the operation.

3,809,885

SEDIMENTOMETER

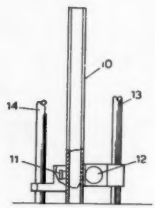
Terence Allen, 2 Strickland Cl., Shadwell, Leeds 17, Yorkshire, England

Filed Jan. 13, 1971, Ser. No. 106,013

Claims priority, application Great Britain, Jan. 14, 1970, 1764/70

Int. Cl. G01n *23/12*

U.S. Cl. 250—357 **5 Claims**



The invention provides an X-ray sedimentometer which uses an isotope X-ray source, both the X-ray source and detector being adapted to be driven relative to the sedimentation tank to take readings at different depths.

3,809,886

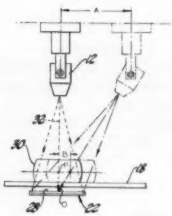
DYNAMIC TOMOGRAPHY WITH MOVABLE TABLE

Gary D. Cochran; David A. Crosby, and Peter A. Franken, all of Ann Arbor, Mich., assignors to CFC Products, Inc., Ann Arbor, Mich.

Filed Nov. 26, 1971, Ser. No. 202,494

Int. Cl. G01n *23/00*

U.S. Cl. 250—323 **11 Claims**

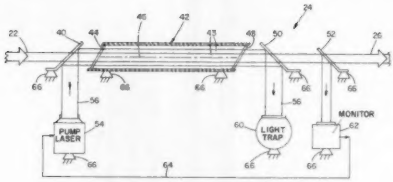


Method and apparatus are disclosed for producing a set of radiographs for use in dynamic tomography. The radiographs in a set are produced by using a stationary holder for the recording medium, such as a rapid film changer. The source of radiation is disposed opposite the stationary holder and the object to be radiographed is disposed on a movable support member in the path of the beam of radiation. An axis of the beam intersects a selected point in the object and a selected point in the holder on the surface of the recording medium for each position of the source of radiation and the support member. The source is energized at each succeeding position to expose the medium and the radiation falls on the same area of the holder in each such position. In the preferred embodiment the support member is moved in synchronism with the source and the source is energized at time intervals which define the several successive positions. With this arrangement, a fixed film holder may be used and a minimum of film area is required for the set of radiographs.

3,809,887
APPARATUS AND METHOD FOR CONTROLLING DIRECTION OF RADIATION

Ali Javan, Cambridge, and Michael S. Feld, Newton Center, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Sept. 5, 1972, Ser. No. 286,091
Int. Cl. H04b *9/00*
U.S. Cl. 250—199 **7 Claims**

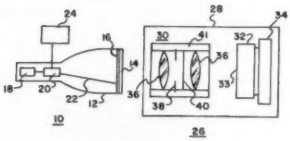


The invention features the use of atomic systems resonant in one or more Doppler broadened transitions which are biased by a radiation field having a frequency within the range of one transition to produce anisotropic radiation transmission properties through the atomic systems. Embodiments of the invention feature an isolating amplifier operating in a communication system and an isolation cell preventing reradiation into a radiation source.

3,809,888
PHOTOGRAPHIC APPARATUS

W. Riley Stock; Melvin M. Balsiger, both of Portland, and William G. Beran, Beaverton, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Sept. 13, 1971, Ser. No. 179,995
Int. Cl. H01j *31/50*
U.S. Cl. 250—213 R **7 Claims**



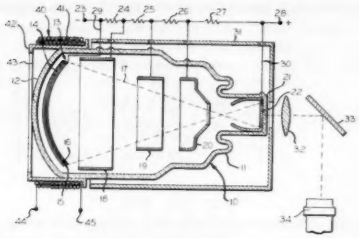
A photographic apparatus including an image intensifier for increasing writing speed and resolution for preferably recording light information displayed on a cathode ray tube is disclosed. The image intensifier intensifies the light image received at the input end thereof through optical lens and also converts the spectrum of the output light into a preferable range in which the photographic film is most sensitive.

3,809,889
IMAGE INTENSIFIER COMPENSATED FOR EARTH'S MAGNETIC FIELD

Robert C. McBroom, Franklin, Wis., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,176
Int. Cl. H01j *31/50*
U.S. Cl. 250—213 VT **14 Claims**

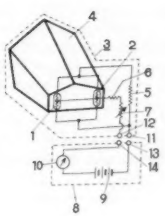
The earth's magnetic field influences the electrons emitted from the photocathode of a radiation image intensifier tube such that the optical image formed on the output screen of the tube is often distorted and rotated. The invention involves locating an electromagnet coil in the vicinity of the photocathode of the image tube where emitted electron energy is low, to nullify the effects of the earth's magnetic field. Means are provided for adjusting the field strength of the coil for various orientations of the image tube.



3,809,890
CAMERA FINDER

Kaneo Saito, Tokyo, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Apr. 13, 1972, Ser. No. 243,785
Claims priority, application Japan, Apr. 14, 1971, 46-27883
Int. Cl. H01j *39/12*
U.S. Cl. 250—214 P **3 Claims**



A novel camera assembly of the type comprising light receiving photoelectric means and a removable finder is provided. The light receiving means includes compensating means and other parts of a photometric device, all of which are mounted in the finder and removable from the camera. An ammeter and power supply for the light receiving photoelectric means is located in the camera body itself.

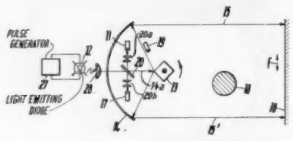
3,809,891
BEAM SCANNING OBJECT DETECTION SYSTEM

Jurgen Erdman, and Hartmut Knappe, both of Waldkirch, Germany, assignors to Erwin Sick, Waldkirch, Germany

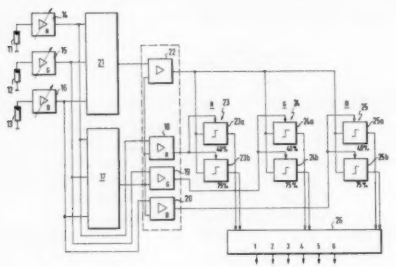
Filed Nov. 21, 1972, Ser. No. 308,589
Claims priority, application Germany, Nov. 22, 1971, 2157815
Int. Cl. G01p *3/68*
U.S. Cl. 250—222 R **17 Claims**

A detection system and method of operation for detecting the presence of an object in a predetermined zone. The detection system includes a pulsating light-emitting device, a lens apparatus for directing the pulses of light into a beam, and a scanning device for sweeping the pulsating beam of light across the detection zone. The detection system also includes at least two photocells, one of which is positioned to receive pulses of light directly from the light-emitting device and the other is positioned to receive light after being transmitted

across the detection area. The signals developed by the photocells take the form of trains of electrical signals and are correlated with appropriate electronic circuitry for detecting the absence of pulses in one of the trains of signals during the presence of pulses in the other train of signals to thereby provide an indication of the presence of an object in the detection area. The electronic circuitry also digitally processes the received signals for developing an output indication representative of the size of the object, as well as the position of the object in the detection area.



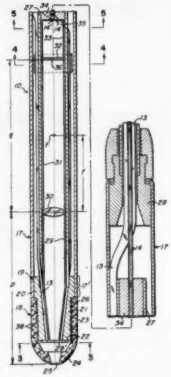
3,809,892
ARRANGEMENT FOR HUE EVALUATION
Helmut Schober, Taufkirchen, Germany, assignor to Erwin Sick Optik-Elektronik, Waldkirch, Breisgau, Germany
Filed Feb. 8, 1973, Ser. No. 330,576
Claims priority, application Germany, Feb. 11, 1972, 2206633
Int. Cl. G01j 3/34
U.S. Cl. 250—226 **6 Claims**



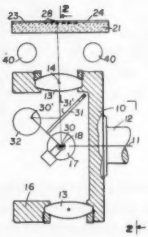
The present invention relates to a system for hue evaluation to be used with reading devices for example in identifying colour rings on ampoules or on packages. Three photoelectric receivers are utilized, each of which receives one of the three primary colours of the hue to be evaluated, and supplies to an evaluating circuit an electric signal corresponding to the proportion of the respective primary colour in the hue, the evaluating circuit forming from the three signals a hue output signal characteristic of the hue. The invention further provides for the primary colour signals to be applied to a maximum formation stage the output of which serves as a reference signal for the primary colour signals.

3,809,893
OPTICAL READER
Bruce W. Dobras, Dayton, Ohio, assignor to The Monarch Marking Systems Company, Dayton, Ohio
Continuation of Ser. No. 104,894, Jan. 8, 1971, abandoned.
This application Feb. 9, 1973, Ser. No. 330,937
Int. Cl. G02b 5/14
U.S. Cl. 250—227 **2 Claims**

There is disclosed an optical reader for reading a record. The user can hold the reader in his one hand and scan a binary coded record. The reader has an elongated housing for mounting a record illuminator, a lens for gathering light reflected or diffused from the record, a mask having an aperture, and a light receptor spaced from the aperture which receives light passing through the aperture. The housing carries a removable, replaceable, tip which is composed of plastic material having a low coefficient of friction and which preferably contains electrically conductive material for rendering the tip electrically conductive to retard the accumulation of dust, lint and the like on the tip.



3,809,894
OPTICAL SCANNER
Peter C. Renzo, Saddle River, N.J., assignor to Creative Logic Corporation, Paramus, N.J.
Continuation of Ser. No. 73,380, Sept. 18, 1970, abandoned.
This application Jan. 30, 1973, Ser. No. 327,926
Int. Cl. G08c 9/06
U.S. Cl. 250—236 **9 Claims**

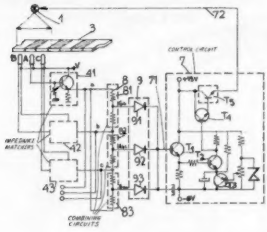


This optical scanner contains a rotor having a plurality of lenses arranged in a helix coaxial with the rotor and having a single convolution. A light source is positioned to emit light appearing to come from the rotor axis. Each lens in turn projects an image of said light source to a record, lighting a narrow area thereof. This lighted area scans a character line of the record as the rotor turns. The axially displaced lenses successively scan different lines of characters without any motion additional to said rotation. The lighted area is projected towards the rotor axis to a region common to all area positions, and a photocell receives the light projected to said region.

3,809,895
SYSTEMS FOR MEASURING DISPLACEMENTS

Jean Taisne, 81 Residence Delphine, 94120 Fontenay-sous-Boise, France

Filed Oct. 5, 1972, Ser. No. 295,126
Claims priority, application France, Oct. 13, 1971, 71.36756
Int. Cl. H01j *3/14*
U.S. Cl. 250—237 G **7 Claims**

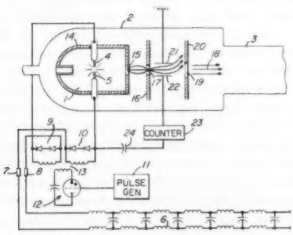


A displacement measuring system has an energy source, a displacement sensor including spaced energy detectors and a measuring scale between the source and the sensors movable with respect to the sensors. The detectors provide phase displaced undulatory signals from movement of the scale. The energy provided by the source is controlled by comparing with a reference signal a continuous energy signal attained by linearly combining the measuring signals provided by the detectors. The energy signal has at all times a level substantially equal to the mean amplitude of the measuring signals.

3,809,896
METHOD FOR THE MASS SPECTROMETRIC ANALYSIS OF SOLIDS

Klaus Dieter Schuy, Am Dobben, and Jochen Franzen, Witten/Ruhr, both of Germany, assignors to Varian Mat GmbH, Bremen, Germany

Filed May 25, 1971, Ser. No. 146,693
Int. Cl. B01d *59/44*
U.S. Cl. 250—286 **7 Claims**

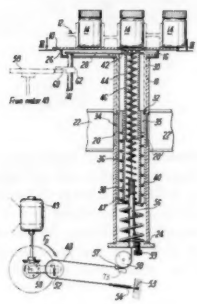


There is disclosed a method for the mass spectrometric analysis of solids using a spark ion source. In one embodiment a plurality of spark discharges are provided for each exposure of an ion sensitive layer, resulting in a corresponding plurality of ion pulses wherein a predetermined number of successive ion pulses out of a given number thereof are suppressed. For example, only one in every one hundred pulses may be used for exposure, whereas the other ninety nine pulses are suppressed. In an alternate embodiment, a predetermined major proportion of the ions constituting each pulse are suppressed, the remainder being allowed to pass to an analysis part of the spectrometer.

3,809,897
SAMPLE CHANGING AND LIGHT SEALING DEVICE FOR LIQUID SCINTILLATION SPECTROMETER

Edward W. Thomas, Rockaway; Walter Oscar Scherzer, Andover, both of N.J., and Fernand Sicard, Saint-Etienne, France, assignors to Intertechnique S. A., Plaisir, France

Filed Mar. 26, 1968, Ser. No. 716,213
Claims priority, application France, Mar. 27, 1967, 67.100706
Int. Cl. G01t *1/20*
U.S. Cl. 250—288 **13 Claims**



The sample changer is for automatically moving samples from a conveyor into a counting chamber and back to the conveyor and for preventing access of light to the counting chamber. It comprises two shutter assemblies so controlled that they alternately open. One of them comprises a plunger carrying the sample to be moved and which, when lowered, successively clears the way for the other shutter assembly to close and forces down the movable component of an abutment type light seal against the return action of a spring.

3,809,898
METHOD OF DETECTING AIRCRAFT FUEL LINE LEAKS WITH RADIOACTIVE GAS TRACERS

Bernard A. Fries, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 4, 1971, Ser. No. 169,060
Int. Cl. G21h *5/02*
U.S. Cl. 250—303 **3 Claims**

A method of detecting aircraft fuel line leaks by dissolving trace amounts of a radioactive gas such as krypton-85, tritium, etc., in the fuel and measuring the level of radioactive emanations along the fuel system. An increase in the intensity of such emanations is noted in the vicinity of the leak.

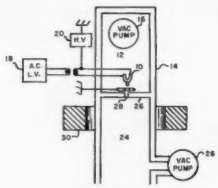
3,809,899
ELECTRON-BEAM TUBE INCLUDING A THERMIONIC-FIELD EMISSION CATHODE FOR A SCANNING ELECTRON MICROSCOPE

Thompson A. Baker, Beaverton; Melvin M. Balsiger, Portland; Kevin T. Considine, Portland, and Herbert E. Litsjo, Portland, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Aug. 17, 1972, Ser. No. 281,375
Int. Cl. H01j *37/26*
U.S. Cl. 250—311 **22 Claims**

An electron-beam tube for a scanning electron microscope employs the use of a TF built-up field emission cathode which

can be operated from preferably the 100 plane in a substantially continuous mode to provide a stable electron beam having high current density, high resolution, and very high electron optical brightness from a source of very small proportions. The tube, which comprises an evacuated envelope having chambers of different vacuums, is designed to facilitate either quick-change cathode replacement or attendance to the



specimen with minimum loss of operating time since the vacuum of the entire tube need not be released. Also, the chamber containing the field emission cathode can be separable from the tube to allow replacement by a new preprocessed cathode in a pre-evacuated chamber. In this case, the mounting means includes a device for puncturing a seal in the cathode chamber to allow the electron beam to pass therethrough.

3,809,900

APPARATUS FOR THE CONTINUOUS, OVERALL X-RAY EXAMINATION OF A MOTOR VEHICLE TIRE

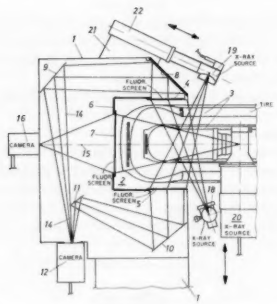
Horst Steffel, Lubeck-Gothmund, Germany, assignor to Collmann GmbH & Co. Spezialmachinenbau KG

Filed Dec. 12, 1972, Ser. No. 314,322

Claims priority, application Germany, Aug. 8, 1972, 2239003

Int. Cl. G01t *1/00*

U.S. Cl. 250—321 **12 Claims**



This invention relates to apparatus for the continuous, overall X-ray examination of a driven motor vehicle tire which is rotatably supported in an expanded state and comprising X-ray apparatus for irradiating the tire from its interior and utilising a sensing camera arrangement having a monitor to reproduce the X-ray picture appearing on at least one fluorescent screen. The invention provides one lateral X-ray tube adjacent each side of the tire to irradiate the side-wall of the tire remote therefrom. An external fluorescent screen is associated with each of the areas of the tire to be irradiated, and the sensing camera apparatus is arranged subsequent to the fluorescent screens. Preferably, but not necessarily, a further X-ray tube is provided for irradiating the tire tread.

3,809,901

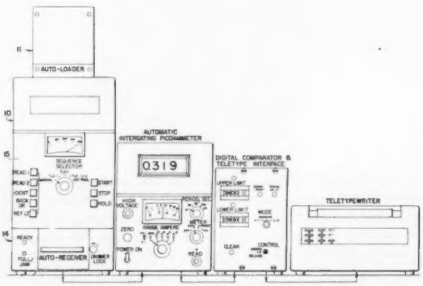
AUTOMATIC THERMOLUMINESCENCE DOSIMETRIC SYSTEM WITH CODED CARD

Andras Szalanczy, Oakwood Village; Erwin F. Shrader, East Cleveland; Bruce M. Shoffner, Shaker Heights, and James D. Chamberlain, Solon, all of Ohio, assignors to Kewanee Oil Company, Bryn Mawr, Pa.

Filed Nov. 30, 1971, Ser. No. 203,281

Int. Cl. H01j *39/00*

U.S. Cl. 250—337 **7 Claims**



A precision machine is provided which automatically senses the thermoluminescence emanating from a dosimeter which has previously been exposed to radiation, particularly X-rays, gamma rays, electrons and neutrons, wherein the dosimeters are mounted in uniform, rectangular cards adapted to be stacked in a cartridge. The cartridge is horizontally disposed near the top of the machine. A single card is selectively transferred from the cartridge into a vertical gate with a plurality of sequential light locks. Each card is automatically positioned for activation of the dosimeter by contact with a cyclically heated, hot element. After a reading of disseminated luminescence has been made, the cards are automatically discharged from the vertical chute into a receiver where they are serially stacked in another cartridge. Readings with less than 1 percent error can be made reproducibly.

A laminated card with at least one aperture adapted to peripherally seal an encapsulated dosimeter is formed by bonding a foraminous, code-adaptable, rigid rectangular sheet of low-Z material with a codedly transparent sheet of low-Z material in light-transmitting registry with particular code-holes of the rigid sheet. The laminated card may be coded to identify the person, circumstances, or location related to its radiation exposure and the identification is printed out, without error, using a "parity checking" system which permits "auto-correction.' Alternatively, where the correction cannot be made automatically, the machine stops to permit visual examination of the rejected card. The card is also coded for identifying the type of card and whether or not it is correctly present at any position during its sequential progress through the machine.

3,809,902

METHOD AND APPARATUS FOR DETECTING INCIPIENT SHORT CIRCUIT CONDITIONS IN ELECTROLYTIC CELLS

Daniel B. Cofer, and Bruce E. Betterton, both of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

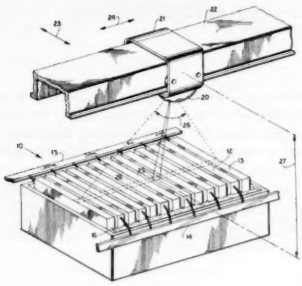
Filed Dec. 15, 1972, Ser. No. 315,411

Int. Cl. G01t *1/00*; G01n *21/30*

U.S. Cl. 250—338 **18 Claims**

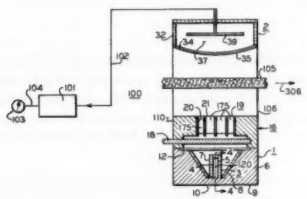
Method and apparatus for detecting the existence of short circuit conditions between adjacent electrodes positioned in

an electrolytic cell. Electrolytic cells of the type characterized by an anode and a cathode, both of which are substantially immersed in a suitable electrolyte, not infrequently develop short circuit conditions caused by physical contact between adjacent electrodes. Incipient short circuit conditions in an electrolytic cell are detected prior to the earliest time of detectability by using prior-art measurements, by scanning the



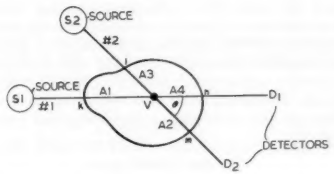
surface of the cell with an infrared sensing apparatus at conditions of scan which permit detection of the thermal abnormality created by the existence of the short circuit condition. The present method and apparatus is useful to scan a large number of electrolytic cells as found in a production facility, so that each of such cells can be rapidly evaluated to determine the possible existence of incipient short circuit conditions.

3,809,903
RADIATION GAUGE
Boong Y. Cho, Columbus, Ohio; Elmer W. Sturkol, Wakefield, Mich., and Keith E. Wier, Columbus, Ohio, assignors to Industrial Nucleonics Corporation, Columbus, Ohio
Filed Dec. 1, 1971, Ser. No. 203,757
Int. Cl. H01j *39/28, 37/20*
U.S. Cl. 250—358 **6 Claims**



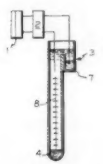
A radiation transmission gauge to measure during manufacture the low atomic number, non-homogeneous, large thickness materials, such as fiberglass, using primarily the radiation photoelectric effect. The gauge source-detector geometry provides monoenergetic X-rays in the 14–30 KEV range, produced by a primary source of gamma radiation of higher energy, through fluorescence of a target. The radiation detector uses Krypton gas and the target material is selected to produce a fluorescence radiation that is above and substantially close to the K-edge of the Krypton gas. Other features of the source-detector geometry minimize the presence of the primary source radiation, to improve gauge accuracy.

3,809,904
METHOD FOR NON-DESTRUCTIVE DENSITOMETRIC MEASUREMENT OF SMALL VOLUMES INSIDE IRREGULARLY SHAPED NON-UNIFORM OBJECTS
Robert Lee Clarke, and Gerk Gerry Van Dyk, both of Ottawa, Ontario, Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada
Filed Oct. 5, 1972, Ser. No. 295,097
Claims priority, application Canada, Nov. 24, 1971, 128434
Int. Cl. G01n *23/02*
U.S. Cl. 250—358 **6 Claims**



In determining the electron density of a small selected volume inside an irregularly shaped non-uniform body using radiographic techniques there has always been a dependence on the absorption of radiation in the medium surrounding the selected volume. The present invention allows the measurement of the electron density of a small volume within a non-homogeneous medium by manipulation of the apparatus. This manipulation removes the dependence of the measurement on the absorption of the X-ray or gamma-radiation in the surrounding medium.

3,809,905
TEMPERATURE COMPENSATING ULTRAVIOLET RAY DETECTOR
Shigeru Suga, Yoyogi 5-20-2, Shibuyaku, Tokyo, Japan
Filed Feb. 7, 1973, Ser. No. 330,245
Int. Cl. G01t *1/24*
U.S. Cl. 250—370 **1 Claim**



A device in which an electrical current flowing through an electrolyte indicates a true value proportional to the intensity of ultraviolet rays, regardless of the ambient temperature. A positive characteristic heat sensing resistor is combined in series with an ultraviolet responsive semiconductor element in a circuit for measuring ultraviolet energies. This circuit includes a scale for indicating the amount of deposited mercury produced by electrolyzing mercury iodide solution with the photocurrent from said ultraviolet responsive semiconductor element. The positive characteristic heat sensing resistor is connected in parallel with the mercury electrolyte and the electrical circuit thereof.

3,809,906

RADIOGRAPHIC COLOUR MATERIAL

Marcel Karel Van Doorselaer, 's-Gravenwezel, Belgium, assignor to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Nov. 3, 1972, Ser. No. 303,385

Claims priority, application Great Britain, Nov. 5, 1971, 51628/71

Int. Cl. G03b 41/16

U.S. Cl. 250—472 11 Claims

A radiographic silver halide colour emulsion for the production of a radiographic monochromic dye image by the steps of radiographic exposure and colour development, said exposure proceeding in contact with an X-ray intensifying screen emitting for at least 50 percent light of the wavelength region beyond 410 nm and having a main emission maximum in the green region of the spectrum, the said emulsion comprising a mixture of a silver halide emulsion capable of producing a visible image upon said exposure and colour development, and a relatively low speed silver chloride-containing emulsion, the speed of which is insufficient to produce a visible image by the said exposure and development, and incorporating at least one colour coupler producing by coupling with an oxidized aromatic primary amino colour developing agent a monochromic dye image, characterized in that said emulsion is spectrally sensitized for the wavelength region comprised between 480 and 600 nm.

3,809,907

CALENDER ROLL APPARATUS WITH DEVICE FOR CONTROLLING THE THICKNESS OF THE BANK OF MATERIAL IN FRONT OF THE ROLLING GAP

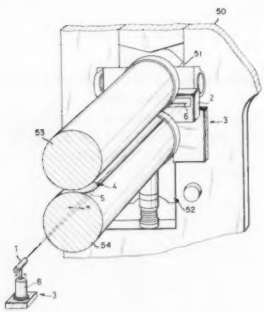
Reinhard Schuller, and Heinz Kopsch, both of Munich, Germany, assignors to Krauss-Maffei AG, Munchen, Germany

Filed Aug. 7, 1972, Ser. No. 278,438

Claims priority, application Germany, Aug. 20, 1971, 2141741

Int. Cl. G01b 7/04

U.S. Cl. 250—219 TH 10 Claims



A device for controlling the bank of viscous material in front of the nip of a pair of calender rolls comprises a source of coherent radiation which is trained, across a surface of the rolling bank turned away from the nip, toward a receiver sensitive to such radiation so that a growth of thickness of the rolling bank obstructs the receiver and produces one signal condition while excessive reduction in the size of the bank creates a second signal condition whereby the calendering operation is regulated. The source of coherent radiation is preferably a laser beam while the receiver is a photocell arrangement juxtaposed with the source which is oscillated to sweep the beam angularly or is reciprocated at high frequency to reciprocate the beam in a plane generally perpendicular to the plane of the roll axes.

3,809,908

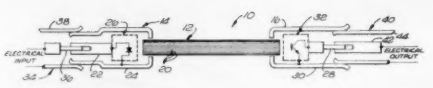
ELECTRO-OPTICAL TRANSMISSION LINE

John S. Clanton, Alexandria, Va., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed June 29, 1973, Ser. No. 375,158

Int. Cl. G02f 1/28; H01p 1/32

U.S. Cl. 250—217 S 7 Claims



An electro-optical transmission line for use in an interconnection system wherein an electrical signal is converted to an optical output signal by a light-emitting diode and the optical light signal is transmitted by an optical fiber bundle to a light receiving diode which converts the optical signal back to an electrical signal. The optical bundle is terminated at its ends with coaxial electrical contact assemblies which mount the diodes. The contact assemblies may be mounted in standard electrical connector members.

3,809,909

SYSTEM FOR THE AUTOMATIC READING OF CURVES

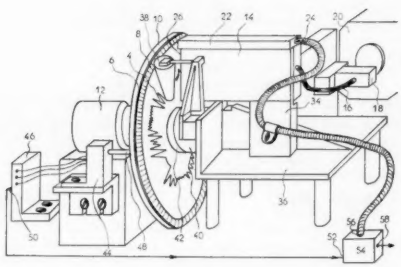
Simone Salet, Montrouge, and Arnaud De Montgolfier, Paris, both of France, assignors to G.I.T.A.C., Levallois Perret, France

Filed June 29, 1973, Ser. No. 375,290

Claims priority, application France, June 30, 1972, 72.23727

Int. Cl. G05b 1/00

U.S. Cl. 250—556 6 Claims



A system for the automatic reading of curves plotted on a chart or graph, more particularly tachograph curves of a vehicle as plotted on a tachograph disc. The system may read one or more curves simultaneously. It enables the curve or curves read off to be converted into the form of trains of electrical signals.

3,809,910

MICROFILM FRAME SELECTION CIRCUITRY

David C. Nellis, Victor, N.Y., assignor to Itek Corporation, Lexington, Mass.

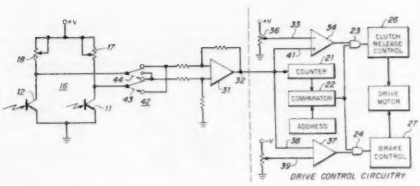
Filed Sept. 13, 1973, Ser. No. 396,918

Int. Cl. G08c 9/06

U.S. Cl. 250—561 5 Claims

First and second photodetectors positioned within a bridge configuration are optically coupled to a control track of a roll of microfilm having optically readable control indicia positioned therein. A differential amplifier is coupled across the bridge to produce a positive and negative going signal as each frame passes through the viewing gate. When a selected frame

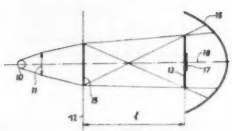
approaches the viewing gate, a first unbalanced condition of the bridge actuates a clutch release control circuit to de-energize the film drive motor. Shortly thereafter, the indicia in the control track produces a second unbalanced condition which actuates a brake control device to stop the drive motor, thereby to position the selected frame within the viewing gate station.



3,809,911
METHOD OF MEASURING OPTICAL DENSITY

Luc Yves Natens, Berchem, Belgium, assignor to Agfa-Gevaert N.V., Mortsel, Belgium

Continuation of Ser. No. 174,469, Aug. 24, 1971, abandoned. This application May 1, 1973, Ser. No. 356,067
Int. Cl. G01n 21/06
U.S. Cl. 250—571 **3 Claims**



A photoelectric device for measuring variations in the optical density of a moving web. The device comprises a lamp at one side of the web path, a photoelectric detector at the other side of the web path, and a screen between the web and the detector which intercepts part of the radiation transmitted by the web to the detector.

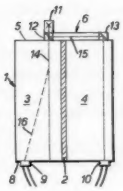
The device is largely insensitive to vibrations of the web.

3,809,912
LIGHT SCATTERING MEASUREMENT INSTRUMENT

Michael Laurence Henning, Shepton Mallet, England, assignor to Plessey Handel und Investments AG, Essex, England

Filed June 21, 1972, Ser. No. 265,017
Claims priority, application Great Britain, June 29, 1971, 30372/71
Int. Cl. G01h 21/26
U.S. Cl. 250—574 **3 Claims**

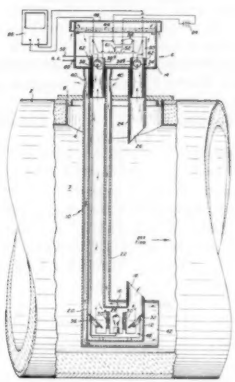
An instrument for measuring light scattering coefficients in a fluid comprises a beam splitter which splits a lightbeam from a light source into two beams of different intensities, each beam passing through the fluid in separate chambers respectively, photocells are positioned in the chambers one being aligned with the beam of lowest intensity and the other out of alignment with the other beam so that it is only sensitive to scattered light. A second light source and beam splitter is also incorporated to enable the operative relationship of the photo cells. Also applicable to turbidimeters where light beams have different path lengths.



3,809,913
DETECTOR FOR PARTICULATE MATTER IN FLOWING GAS STREAMS

Samuel B. Prellwitz, Pittsburgh, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Oct. 20, 1972, Ser. No. 299,534
Int. Cl. G01n 21/26
U.S. Cl. 250—575 **4 Claims**



Apparatus is an air-cooled and air-cleaned photoelectric smoke or particulate matter detector that can be installed into a gas flue or other gas passageway using only one entry into the flue through a single aperture.

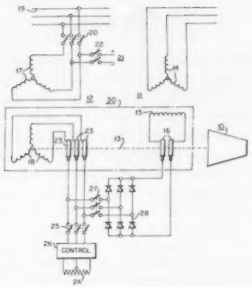
3,809,914
STARTING SYSTEM FOR POWER PLANTS

Lee A. Kilgore, Export; Robert E. G. Ratcliffe; Henry L. Smith, both of Monroeville, and Bernard S. Strait, Jr., Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 13, 1972, Ser. No. 271,427
Int. Cl. F02n 11/08
U.S. Cl. 290—38 **5 Claims**

A starting system for power plants having a prime mover which is not self-starting, such as a gas turbine, or for other

synchronous machines which are not self-starting. The generator or other synchronous machine has an exciter which is



designed to operate as a wound rotor induction motor for starting and as a normal exciter thereafter.

ERRATUM

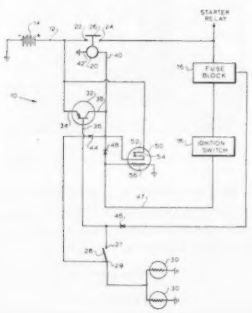
For Class 290—40 see:
Patent No. 3,810,251

3,809,915

ELECTRICAL POWER DELAY AND CUTOUT CIRCUIT

Charles H. Bost, Winter Haven, Fla., assignor to BK & K Enterprises Inc., Orlando, Fla.

Filed Dec. 8, 1972, Ser. No. 313,455
Int. Cl. H02g *3/00*
U.S. Cl. 307—10 AT **16 Claims**



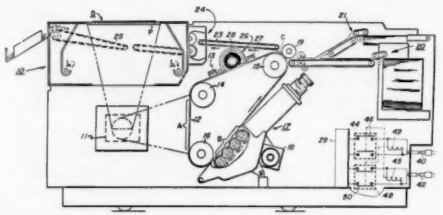
A circuit interrupting means is adapted to be interposed along a circuit line from a current source. Means are included for actuating the circuit interrupting means to interrupt the circuit line only during the absence of current flow therethrough, and means for re-establishing the circuit line coincident with a current demand upon the source through an auxiliary circuit coupled thereto.

3,809,916

DUAL CORD INTERLOCK

Arthur T. Crane, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 11, 1972, Ser. No. 314,219
Int. Cl. H01h *47/00*
U.S. Cl. 307—18 **4 Claims**



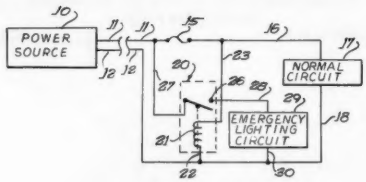
A xerographic reproduction machine employing dual power input lines to divide the machine power load between two electrical circuits to prevent overload of either circuit.

3,809,917

EMERGENCY AUXILIARY CIRCUIT SWITCH AND LIGHTING SYSTEM

Richard E. Vore, R.R. No. 1, Eaton, Ind.

Filed June 27, 1973, Ser. No. 373,988
Int. Cl. H05b *37/04*
U.S. Cl. 307—39 **5 Claims**



An emergency auxiliary circuit switch and lighting system for use in the home and the like wherein both the normal circuit and the emergency circuit are supplied from the same main power source with the emergency switch connected so that in the event of an overload in the normal circuit resulting in the opening of the fuse or circuit breaker protecting the circuit then the emergency switch will automatically connect the emergency lighting circuit to the power source in a manner to provide limited illumination in a selected area, and when the emergency is over and the fuse restored so that the normal circuit is again operation, then the emergency switch will automatically disconnect the emergency lighting circuit and return the same to a standby condition.

3,809,918

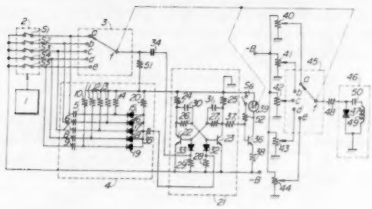
PROGRAM APPARATUS

Tsuneo Okubo, Osaka; Shoichi Nakamura, Tondabayashi, and Eizo Mori, Uji, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 12,640, Feb. 19, 1970, abandoned.
This application Feb. 11, 1972, Ser. No. 225,654
Claims priority, application Japan, Feb. 28, 1969, 44-16025; Apr. 25, 1969, 44-32964; Apr. 25, 1969, 44-32965; May 22, 1969, 44-41230; May 22, 1969, 44-41231; May 22, 1969, 44-41232; May 23, 1969, 44-41247
Int. Cl. H01h *43/00*
U.S. Cl. 307—41 **9 Claims**

A programming apparatus capable of sequentially and automatically switching a preset information sources at preset

times, comprising a time signal generator generating time signals at least at two preset times respectively for predetermined periods of time, a memory device having its operation inverted by the time signals obtained by means of said time signal generator and holding a driving device such as a motor



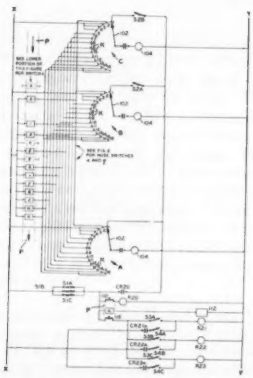
in the driven state, a first change-over switch driven by said driving device and in which the respective information sources to be set are connected to a group of fixed contacts thereof, and a second change-over switch interlocked with said first change-over switch and having its group of fixed contacts connected to said time signal generator.

3,809,919

CONTROL SYSTEM FOR AUTOMATIC VEHICLE WASHING INSTALLATION

Albert Glenn Aaron, Chesterfield, Mo., assignor to Passpoint Corporation, Maryland Heights, Mo.

Filed Nov. 24, 1972, Ser. No. 309,101
Int. Cl. B60s *3/04*
U.S. Cl. 307—41 **11 Claims**



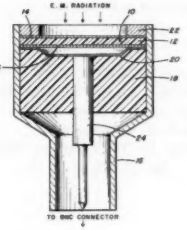
A control system for an automatic car wash installation includes position switches which are operated in sequence by vehicles passing through the installation. The position switches are connected to at least two programmers, which are actually stepping switches, and these programmers are interconnected such that one programmer is stepped by the first vehicle entering the wash installation and closing the position switches therein and the other programmer is stepped by a subsequent vehicle which enters the wash installation while the first vehicle is still in it. Thus, the different programmers track different vehicles through the wash installation. The programmers have switches which are opened and closed according to a predetermined schedule, and corresponding switches on the programmers are connected to various components of the car wash installation to operate those components in accordance with the predetermined schedule as the position switches are tripped. One of the components is a wax applicator which is in circuit with corresponding programmer switches as well as with the contacts of a relay which may be closed only when the car enters the installation, so that the condition of the relay determines whether or not the vehicle will be waxed near the end of the installation. Thus, the relay provides the circuit with memory logic.

3,809,920

POLYMERIC PYROELECTRIC DETECTOR

Julius Cohen; Seymour Edelman, both of Silver Spring, Md., and Carol F. Vezzetti, Arlington, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 25, 1972, Ser. No. 283,867
Int. Cl. H01g *7/02*
U.S. Cl. 307—88 ET **3 Claims**



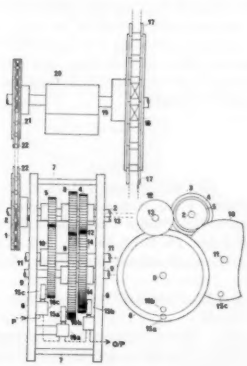
A polymer pyroelectric detector made by selecting a film of polymeric material which has dipoles in its molecular structure, physically treating the film so that the dipoles have a net orientation and coating the upper and lower surfaces of the film with thin films of conductive material to act as electrodes. Detectors made from PVF or PVF_2 are sensitive to a wide range of electromagnetic radiation, especially radiation in the IR region.

3,809,921

PHASE IDENTIFIER ASSEMBLY FOR ENDLESS CONVEYOR CONTROL APPARATUS

John Albert Formby, Moseley, England, assignor to John Formby & Company, Limited, Birmingham, England

Continuation of Ser. No. 747,561, July 25, 1968, abandoned. This application Sept. 23, 1970, Ser. No. 74,933
Int. Cl. H01h *35/00, 43/00*
U.S. Cl. 307—116 **7 Claims**



A phase identifier for the purpose of identifying an arbitrarily chosen phase of the cyclical movement of a conveyor, as

represented by a loop of chain or the like, comprises a plurality of wheels positively driven by the loop at different speeds, but such that the speed of one wheel is a non-integral multiple of the speed of the slowest, so that any set of orientations of the wheels repeats periodically to define a cycle, greater than the cycle of any individual wheel, which cycle is made equal to the conveyor loop cycle by adjustment of the length of the loop. Associated with each wheel is a dowel adapted to operate a switch, and power is applied to the switches in series to give rise to an electrical signal at one phase of the phase identifier cycle and, consequently, at any arbitrary phase of the loop cycle. Two such identifiers in relation to one loop cause on-loading of a consignment at any prescribed point of the conveyor and off-loading of the same consignment at any other prescribed point. A multiplicity of phase identifiers are adapted to effect multiple conveyance of consignments from a set of on-loading points to a set of off-loading points within one cycle of the conveyor movement.

3,809,922

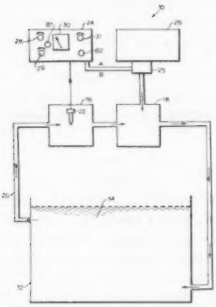
SYSTEM FOR MONITORING AND CONTROLLING SUBSTANCES IN FLUID BODIES

Donald R. Emmons, and William C. Beverly, Jr., both of 11222 Astronaut Blvd., Orlando, Fla.

Filed Nov. 10, 1972, Ser. No. 305,309

Int. Cl. H01h *35/18*

U.S. Cl. 307—118 **12 Claims**



The addition of substances, such as chlorine, to fluid bodies is controlled and the concentration of such substances is monitored by a system including a temperature compensated probe for measuring the concentration, and electronic means responsive to outputs of the probe for adding the substance, as needed, to the desired level.

3,809,923

TRANSVERSAL FILTER

Leonard Jan Maria Esser, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

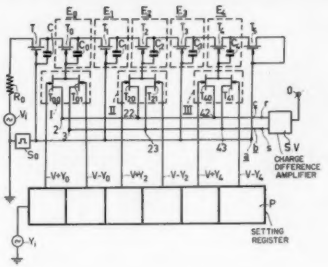
Filed Jan. 29, 1973, Ser. No. 327,474

Claims priority, application Netherlands, Feb. 17, 1972, 7202070

Int. Cl. H03k *5/159*; **G11c** *11/40*

U.S. Cl. 307—221 D **4 Claims**

Transversal filter having adjustable weighting factors and including a bucket-brigade store as a shift register. The bucket-brigade store comprises a sequence of capacitors which are connected to each other by the main current paths of transistors. Each of the circuits comprising the series combination of a main current path and two capacitors includes a current dividing device the outputs of which are connected to a summing device. The values of the said weighting factors are



determined by the current dividing ratios of the current dividing devices.

3,809,924

METHOD AND APPARATUS FOR CONTROLLING THE DRYING OPERATION IN AN APPLIANCE SUCH AS A DRYER, WASHER-DRYER OR THE LIKE

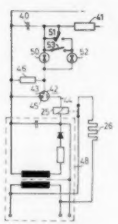
Peter Grunow, and Georg Sarukhanian, both of Berlin, Germany, assignors to Siemens Electrogerate GmbH, Munchen, Germany

Filed Nov. 2, 1972, Ser. No. 303,070

Claims priority, application Germany, Nov. 5, 1971, 2155710; Sept. 15, 1972, 2245778

Int. Cl. F26b *13/10*

U.S. Cl. 307—125 **8 Claims**



A method of controlling the drying operation of laundry in dependence upon the moisture content thereof in an appliance such as a dryer, washer-dryer or the like is disclosed. The appliance has a program control device and is of the tumbler type wherein an electrostatic charge occurs on the laundry when the laundry becomes dry. The method includes sensing the electrostatic charge occurring on the laundry when the laundry becomes dry to provide an electrical signal indicative of the field intensity developed by the electrostatic charge, and then transmitting the electrical signal to an operational amplifier connected to the program control device whereby the operational amplifier operates on the control device in response to the voltage signal.

An apparatus for carrying out the above method is also disclosed and includes a structure arranged in the appliance so as to be in contact with the laundry tumbled during the drying operation; this structure thus receives an electrostatic charge thereon in response to the electrostatic charge occurring on the laundry when the laundry becomes dry. An electrically conductive sensing member is connected to the structure for sensing the electrostatic charge collected thereon to provide a voltage signal indicative of the electric field intensity developed by the electrostatic charges on the laundry and the

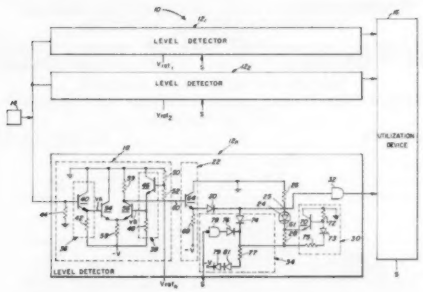
structure. An electronic operational amplifier having an input control electrode is also provided and a glow discharge device is connected between the sensing member and the control electrode. The glow discharge device transmits the voltage signal to the control electrode after the voltage signal has attained a predetermined value corresponding to the laundry in the appliance. The operational amplifier is connected to the program control device of the appliance whereby the operational amplifier operates on the program control device in response to the voltage signal of pre-determined value.

3,809,925

ANALOG-TO-DIGITAL CONVERTER LEVEL DETECTOR

Daniel Hertz, Framingham, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Aug. 31, 1972, Ser. No. 285,176
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 **1 Claim**



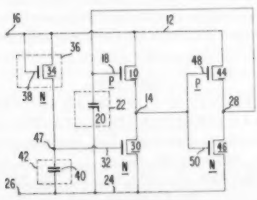
An improved analog-to-digital (A/D) converter is disclosed wherein each one of a number of level detectors includes a tunnel diode buffered from an input signal through a differential amplifier and a hot carrier diode. The differential amplifier hot carrier diode buffering arrangement provides, inter alia, isolation between the tunnel diode and the other level detectors used in the A/D converter. The hot carrier diode switches from a low current quiescent condition to a high current quiescent condition as the tunnel diode switches between its pair of quiescent conditions. The gain provided by the differential amplifier, together with the current gain effect produced in switching the quiescent condition of the hot carrier diode, results in a level detector having a relatively high gain-bandwidth product.

3,809,926

WINDOW DETECTOR CIRCUIT

Alexander Wilson Young, High Bridge, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 28, 1973, Ser. No. 345,707
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 R **24 Claims**



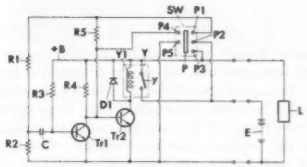
The circuit includes an MOS transistor for transmitting the applied voltage wave to the output signal terminal during the interval that applied voltage is between two voltage limits and circuit elements responsive to the applied voltage wave exceeding the higher of these limits for disabling the MOS transistor and for clamping the output signal terminal to a reference level such as ground.

3,809,927

DELAY TIMING CIRCUIT

Katsuyuki Takagi, Gifu, and Haruo Miwa, Minokamo, both of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishikasugai-gun, Aichi Pref., Japan

Filed Mar. 30, 1972, Ser. No. 239,572
Claims priority, application Japan, Mar. 31, 1971, 46-19153
Int. Cl. H03k *17/26*
U.S. Cl. 307—293 **6 Claims**



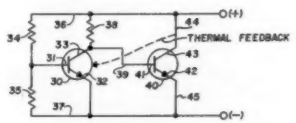
A timer apparatus includes a timer circuit utilizing the charging and discharging of a capacitor. The timer circuit comprises a timing capacitor adapted to charge in the direction for cutting-off a transistor at the setting time, a switch adapted to apply the voltage in the direction for discharging of said capacitor, and a transistor adapted to be turned conductive after a given time from the commencement of discharging. Said timer has excellent temperature and voltage characteristics without employing a Zener diode and FET, is hardly affected by the D.C. current amplification factor of said transistor and the open-circuit voltage of a relay and can determine a set time to be several seconds through dozens of minutes.

3,809,928

INTEGRATED STRUCTURE AMPLIFIER WITH THERMAL FEEDBACK

Lee L. Evans, Santa Clara, Calif., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 222,235, Sept. 7, 1962, abandoned. This application Aug. 1, 1966, Ser. No. 569,533
Int. Cl. H03f *1/30*
U.S. Cl. 307—303 **15 Claims**



A high gain A.C. transistorized amplifier circuit is fabricated into a single body of semiconductor material. The negative feedback circuit to stabilize the amplifier connected between the output and input of the amplifier and the temperature compensating means connected to the output of the amplifier are both thermally connected to the input stage but also isolated from said stage through said body. Therefore heating effects on the amplifier is minimized and the need for large values of capacitors and inductors in the feedback circuit are avoided.

3,809,929

TEMPERATURE SENSING DEVICE

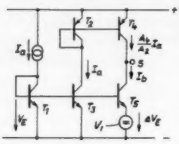
Eric Andre Vittoz, Cernier, Switzerland, assignor to Centre Electronique Horloger SA, Brequet, Neuchatel, Switzerland

Filed June 19, 1972, Ser. No. 264,339

Claims priority, application Switzerland, June 21, 1971, 9065/71

Int. Cl. H03k *3/295*; **G01k** *7/00*

U.S. Cl. 307—310 **5 Claims**



A digital output temperature sensing device comprises identical first and second n-p-n transistors manufactured together in an integrated circuit and across which different base-emitter voltages are applied. The non-saturated collector-emitter current of the second transistor, which is a function of the collector-emitter current through the first transistor and of the absolute temperature, is "compared" with a temperature-independent current provided as a function of the collector-emitter current of the first transistor and of the ratio of the effective injection surface areas of the base-emitter junctions of a pair of otherwise identical p-n-p transistors, a temperature dependent digital output signal being provided according to whichever of the "compared" currents is greater.

3,809,930

STATIC RELAYING CIRCUIT

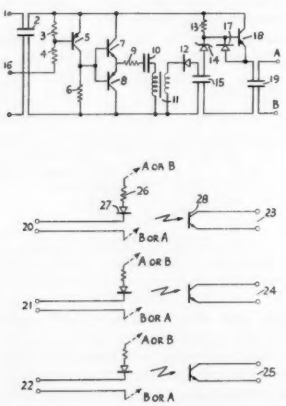
Christopher Robert Brown; Terence Malcolm George, and David John Norton, all of London, England, assignors to Westinghouse Brake and Signal Company Limited, London, England

Filed Sept. 23, 1971, Ser. No. 183,162

Claims priority, application Great Britain, Oct. 29, 1970, 51334/70

Int. Cl. H03k *17/00*

U.S. Cl. 307—311 **18 Claims**



A system of fail-safe static logic is proposed which uses circuit elements closely analogous to conventional electromechanical relays. The d.c. feeds found in conventional relay circuitry are replaced by pulsating feeds originating from a multivibrator. The coil of a conventional relay becomes a simple electronic circuit, which normally gives a positive d.c. output (corresponding to the release condition of the relay), changing in polarity to a negative d.c. output (equivalent to pick-up of the relay) when a pulsating feed is applied to the input. Each conventional relay contact is replaced by an insulated signal coupler which is capable of passing on a pulsating feed signal provided it is also enabled by a d.c. voltage of correct polarity obtained from the output terminals of the 'coil' circuit, the sense of the connexions determining whether the contact acts as a 'front' or a 'back.'

3,809,931

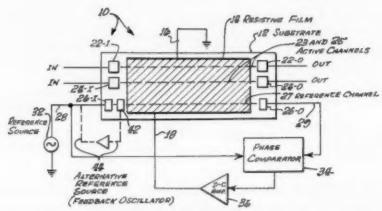
TEMPERATURE-STABILIZED TRANSDUCER DEVICE

Richard M. White, Berkeley, Calif., and Ramesh Chandra Goyal, Edmonds, Wash., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 19, 1973, Ser. No. 342,348

Int. Cl. H01v *7/00*

U.S. Cl. 310—8.1 **8 Claims**



TEMPERATURE-COMPENSATED TRANSDUCER DEVICE

A transducer device comprising a substrate capable of propagating an elastic wave on its surface. A resistive film is disposed generally centrally upon the substrate, the film having a grounded lead on one side of the film and an ungrounded lead on the other side of the film. At least one active-channel transducer is disposed on the substrate, for processing a surface-elastic wave, each transducer comprising an input active-channel transducer, disposed on one side, the input side of the resistive film, and an output active-channel transducer, disposed on the other side, the output side, of the resistive film. A reference-channel transducer, also disposed on the substrate, comprises an input reference-channel transducer, disposed on the input side of the film, and connectable to a reference signal source, which causes an elastic surface wave to propagate across the substrate including the area occupied by the resistive film; and an output reference-channel transducer, having an output lead, and disposed on the output side of the film. The combination comprises a surface-wave transducer device which may be temperature-stabilized.

3,809,932

MEANS PREVENTING CONTINUED ROTATION IN A WRONG-WAY DIRECTION OF ROTATING MEMBER

Robert Dale Erwin, Indianapolis, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

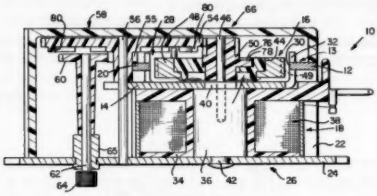
Filed Apr. 13, 1973, Ser. No. 350,721

Int. Cl. H02k *7/10*

U.S. Cl. 310—41 **24 Claims**

A rotating member includes stop means engaging an engagement means carried on an accompanying gear upon rota-

tion in a wrong-way direction of the rotating member. The accompanying gear further includes a channel means through



which the stop means passes uninhibited upon continued rotation in a correct direction of the rotating member.

3,809,933

SUPERCOOLED ROTOR COIL TYPE ELECTRIC MACHINE

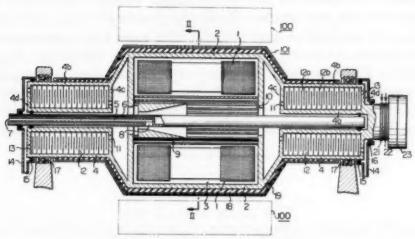
Hiroyuki Sugawara, and Kooji Kuwabara, both of Hitachi, Japan, assignors to Hitachi Ltd., Chryoda-ku, Japan

Filed Aug. 25, 1972, Ser. No. 283,649

Claims priority, application Japan, Aug. 27, 1971, 46-65110

Int. Cl. H02k *9/00*

U.S. Cl. 310—52 **19 Claims**



An electric rotary machine having an armature coil at ambient temperature disposed on the stator and a supercooled field coil disposed on the rotor and enclosed in a container which is integral with said rotor, a major part of the outer surface of said container being coated with a thermal insulation layer, the supercooling liquid being introduced into the container through a tube inserted into the rotor along the rotational axis of the rotor, and the evaporated gas of the supercooling medium being discharged through a labyrinthine path or a series of partitioned compartments provided at each axial end of the container to establishing a uniform temperature gradient along the shaft of the rotor between the inside of the supercooled rotor and the axial ends thereof which are at ambient temperature.

3,809,934

GAS-COOLED ELECTRICAL GENERATOR

Jurgen Baer, Magenwil; Dieter Sommer, Untersiggenthal, and Ernst Toplak, Lupfig, all of Switzerland, assignors to Brown Boveri & Company Limited, Baden, Switzerland

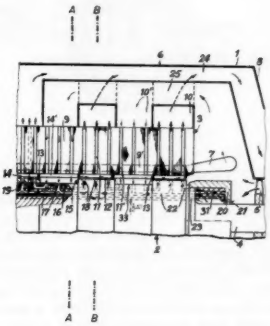
Filed Apr. 20, 1973, Ser. No. 353,081

Claims priority, application Switzerland, May 9, 1972, 6810/72

Int. Cl. H02k *9/00*

U.S. Cl. 310—53 **6 Claims**

A gas-cooled dynamo-electric machine such as a turbo-driven generator includes cooling channels extending radially through the stator to the gap between it and the rotor, and also cooling channels extending both axially and radially through the rotor, for the circulation of a cooling gas. The rotor is stepped longitudinally into a series of successive stages alternating in diameter thereby to establish corresponding zones alternating in gap width. The radially inner ends of those cooling channels in the stator component carrying gas radially inward and axially correlated with the zones having the larger gap width are provided with vanes profiled to effect a reduction in the impact losses at the gas entrance ends of the axially



correlated radial channels in the rotor component, and the radially inner ends of those cooling channels in the stator component carrying gas radially outward and axially correlated with the zones having the smaller gap are provided with vanes profiled to recover the velocity energy of the cooling gas discharged into the gap from the radial channels in the rotor component functioning as the flow channels of a radial compressor.

3,809,935

ELECTRIC MOTOR CONSTRUCTION

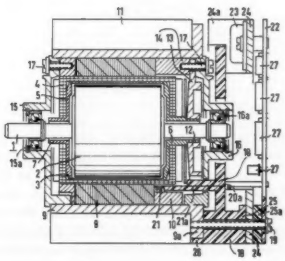
Reiner Kristen, and Manfred Liska, both of Nurnberg, Germany, assignors to Siemens Aktiengesellschaft, Munchen, Germany

Filed Sept. 15, 1972, Ser. No. 289,550

Claims priority, application Germany, Sept. 20, 1971, 2146893

Int. Cl. H02k *11/00*

U.S. Cl. 310—68 **5 Claims**

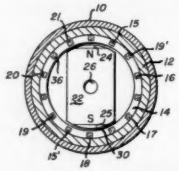


A DC motor of the type commutated by Hall generators and solid-state switching elements is made with a construction at its end through which the motor's field winding conductors extend, comprising a stack of parts connected together to that end of the motor and including a mounting for the Hall generators, a heat sink mounting the switching elements, and a circuit board for the various circuitry components.

3,809,936
BRUSHLESS GENERATOR

Enrique J. Klein, 848 Boyce Ave., Menlo Park, Calif.

Filed May 18, 1972, Ser. No. 254,414
Int. Cl. H02k 19/24
U.S. Cl. 310—171 14 Claims

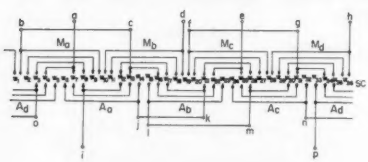


Apparatus for indicating velocity of rotation by developing an alternating voltage signal which when rectified provides a unidirectional voltage having a low ripple content and a magnitude proportional to the angular velocity of the rotation. A magnetic rotor mounted on a shaft is driven within a stator including an annular magnetic return path and a number of coils mounted within a constant width non-magnetic gap. The rotor, magnetic return path and coils form a geometrical arrangements such that the electromotive forces induced in each coil upon rotation of the rotor have trapezoidally shaped wave forms. The currents produced by these electromotive forces are summed using a full-wave rectifier circuit to obtain a low ripple DC signal.

3,809,937
STATOR FOR SINGLE-PHASE INDUCTION MOTOR

Toshio Koike, Funabashi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 14, 1972, Ser. No. 306,385
Claims priority, application Japan, Feb. 28, 1972, 47-19690
Int. Cl. H02k 3/00
U.S. Cl. 310—184 11 Claims

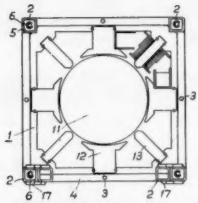


A stator for single-phase induction motors, in which a main winding consists of the same number of coil units as that of the poles of the motor to form the poles, each of the coil units is divided into two, first and second coil groups, the first and second coil groups are connected in series and the ends of this series combination are connected across a single-phase AC voltage source, and an auxiliary winding is connected in parallel with the first group only. When arranged in this way, the magnitude and phase of a current that flows in the first coil group tend to differ from those of a current that flows in the second coil group with a resultant increase in the harmonic components included in the electromotive forces generated by the coil groups. Therefore, the magnetomotive forces of auxiliary poles which are equal in number to the main poles are made dissymmetrical so as to reduce such harmonic components.

3,809,938
STATOR FOR A DIRECT CURRENT MACHINE

Sven Sjoberg; Herlov Fagerstad, and August Weng, all of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed June 28, 1973, Ser. No. 374,377
Claims priority, application Sweden, Aug. 11, 1972, 10423/72
Int. Cl. H02k 1/12
U.S. Cl. 310—254 3 Claims



A stator for a direct current machine includes a laminated stator ring with four salient poles. There are a plurality of layers of lamination arranged side by side. Each layer is formed of four substantially L-shaped magnetic sheet-metal segments. Each segment has an external indentation at its corner, in which fit four longitudinal beams. Four pairs of cross beams are welded to the longitudinal beams and are directed perpendicularly thereto, with each pair positioned in the planes of the resulting rectangular frame. The stator ring is clamped in the stator support between the two rectangular frames formed by the cross beams. The ends of the longitudinal beams extend beyond the frames and support bearing shields which form spaces for a commutator and a ventilator.

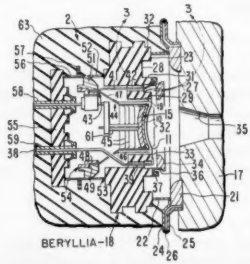
ERRATUM

For Class 313—7 see:
Patent No. 3,809,957

3,809,939
GRIDDED ELECTRON TUBE EMPLOYING COOLED CERAMIC INSULATOR FOR MOUNTING CONTROL GRID

George V. Miram, Daly City, and Yosuke M. Mizuhara, San Francisco, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Nov. 8, 1972, Ser. No. 304,703
Int. Cl. H01j 1/02
U.S. Cl. 313—39 8 Claims



The gridded gun of an electron tube includes an annular high voltage beryllia insulator body having good thermal con-

ductivity. The thermionic cathode emitter is mounted within the central bore in the annular beryllia insulator in thermally insulative relation relative to the insulator body. The control grid and focus electrode for the gun are mounted from the surface of the annular insulator facing the anode. The outer periphery of the annular insulator is mounted to the body of the electron tube in heat exchanging relation therewith, such that the control grid is cooled by thermal conduction through the beryllia insulator body to the cooled main body of the electron tube.

3,809,940

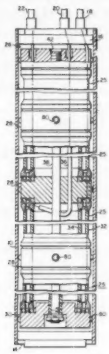
RADIATION DETECTOR OF ELONGATED LENGTH WITH ELECTRODE SUPPORT ASSEMBLY THEREFOR

Youston M. Sekella, Elmira Hgts., N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 25, 1972, Ser. No. 300,619

Int. Cl. H01j *39/32*

U.S. Cl. 313—61 R **6 Claims**



A radiation detection device having a plurality of tubular concentric electrode assemblies positioned end to end within a housing wherein the tubular electrode assemblies are supported by an electrode support assembly comprised of a plurality of electrode support members positioned at the ends of the tubular electrode assemblies so as to space the concentric electrodes and also provide insulation therebetween. The electrode supports are also provided with a plurality of extending ball-like members from the outer periphery of the electrode supports resiliently mounted within the electrode support to accurately position the electrode assemblies within the housing, provide good electrical contact between the housing and the electrode support and also permit ease of removal of the entire assembly from the housing without damage to the components or casing.

3,809,941

PHOTOEMITTER STRUCTURE INCLUDING POROUS LAYER OF PHOTOEMISSIVE MATERIAL

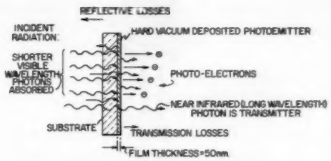
Haden J. Bourg, Jr., Glen Burnie, Md.; James F. Nicholson, deceased, late of Arnold, Md., and Roy D. Cromwell, administrator, Arnold, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 110,057, Jan. 27, 1971, abandoned. This application July 11, 1972, Ser. No. 270,774

Int. Cl. H01i *39/00*

U.S. Cl. 313—94 **8 Claims**

A photoemitter of improved quantum efficiency is formed by smoke or low density deposition of photoemissive materials on a substrate. Significantly, the photoemissive layer is deposited in the presence of a low pressure gas to form a layer whose density is not greater than 20% and preferably not greater than 5% of the photoemissive material in its bulk form. Individual particle size is controlled and deposited particles are isolated, affording greater surface contact area with the subsequently deposited constituent materials of the photoemissive surface, thereby enhancing interaction and increasing the photoelectron emission. The low density, ran-



domly oriented smoke deposits provide a photosensitive surface characterized by high absorption, low reflective losses, and low transmissive losses. The spectral response curve of smoke photoemitters peaks further into the red or near infrared region than prior art devices, rendering the smoke photoemitters of the invention ideally suited for use as near infrared sensors in low light level imaging system.

3,809,942

CLOSED REFLECTOR PROVIDED WITH INCANDESCENT LAMP

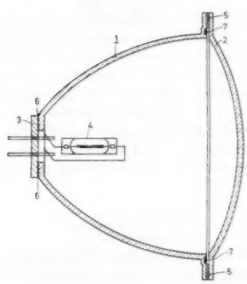
Anton Boekkool, and Willem Westerveld, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 16, 1972, Ser. No. 263,415

Claims priority, application Netherlands, June 21, 1971, 7108536

Int. Cl. H01k *1/56;* **H01j** *5/16*

U.S. Cl. 313—113 **4 Claims**



A closed reflector unit provided with an incandescent lamp in which a transparent face plate is secured to the reflector housing by means of an adhesive. The reflector accommodates a drying agent.

3,809,943

HIGH INTENSITY DISCHARGE LAMP ELECTRODE

Byron R. Collins, Euclid, and Charles I. McVey, Shaker Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

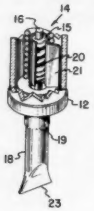
Filed Apr. 19, 1973, Ser. No. 352,607

Int. Cl. H01j *61/06*

U.S. Cl. 313—217 **9 Claims**

In horizontally operated high pressure sodium vapor lamps using alumina ceramic envelopes, spotting and blackening of the envelope has been traced to loose emission material released from the electrodes. Loss of emission material from a

double layer wound tungsten electrode is prevented by wrapping a foil of refractory metal such as tungsten or molybdenum around the inner coil after the emission material has



been applied, and then winding or screwing the outer coil over the foil. The outer coil holds the foil in place and the foil in turn holds the emission material in place.

3,809,944

LOW-PRESSURE MERCURY VAPOUR DISCHARGE LAMP

Hermanus Maria Jongerius, and Rein Willemse Van Der Wolf, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Phillips Corporation, New York, N.Y.

Filed Aug. 25, 1972, Ser. No. 283,843

Claims priority, application Netherlands, Aug. 28, 1971, 7111885

Int. Cl. H01j *61/20*

U.S. Cl. 313—227 **7 Claims**

An aperture lamp, especially for phototype purposes in which the glass in the aperture is coated with a conducting transparent coating having a resistance of between 5 and 200 kOhms. This coating does not only reduce blackening of the glass in the aperture but also decreases the ignition voltage considerably.

3,809,945

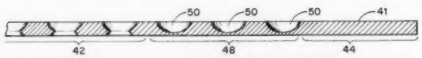
SHADOW MASK FOR COLOR CATHODE RAY TUBE AND METHOD OF MANUFACTURE THEREOF

Neil M. Roeder, Villa Park, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Mar. 2, 1973, Ser. No. 337,339

Int. Cl. H01j *29/06*

U.S. Cl. 313—85 S **14 Claims**



This disclosure depicts novel aperture masks for rectangular color cathode ray tubes which are constructed such that hole enlargement, distortion or tearing which may be introduced in a mask-forming operation is minimized. In each embodiment depicted, a mask blank from which a mask is formed has an interior portion containing a pattern of electron-transmissive apertures, a peripheral portion adapted to be permanently deformed into a rigid mask skirt, and a transition structure between the interior and peripheral portions. The transition structure is caused to have a yield strength which is between that of the interior portions and said peripheral portion such that at least a part of the stretching forces and stretch deformation introduced in the mask-forming operation which would otherwise act upon and distort the aperture pattern in the interior portion of the mask is absorbed by the transition structure. In a preferred embodiment, the transition structure is provided by the formation of a plurality of additional rows of mask apertures etched part-way-through on the periphery of the aperture pattern which cause the transition structure to have the said intermediate yield strength. Alternative transition structures and methods for fabricating masks as described are also depicted.

3,809,946

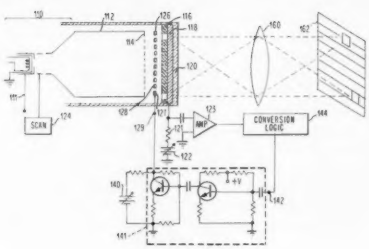
MULTIPLE FUNCTION VIDICON TUBE INCLUDING A TRANSMISSION GRID

Niel Myron Poley, Kingston, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1971, Ser. No. 213,082

Int. Cl. H01j *31/48*

U.S. Cl. 315—11 **4 Claims**



An improved vidicon tube is produced by adding a transmission grid to a standard vidicon tube. The improved tube serves as an image buffer which is compatible with broadband and narrowband transmission lines and can be written electrically at high or low data rates as well as optically. Information optically impressed on the photoconductor can be transferred to storage on the transmission grid. The improved vidicon, when built with a standard T.V. compatible photoconductor, is used as an intrusion alarm. When the improved vidicon is built with a storage photoconductor, information which is electrically written on the transmission grid is converted to conductivity storage in the photoconductor. Appropriate supporting apparatus and methods of operating this versatile tube are discussed.

3,809,947

SINE WAVE DEFLECTION SYSTEM FOR CORRECTING PINCUSHION DISTORTION

Louis Edward Ambrico, Hyde Park; Stavros George Katsafouros, Saugerties; Bergert George Kleen, and William Roger Lamoureux, both of Kingston, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

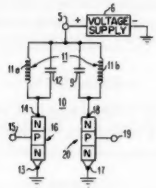
Filed Dec. 17, 1971, Ser. No. 209,234

Int. Cl. H01j *29/70*

U.S. Cl. 315—27 GD **4 Claims**

A capacitor and a deflection winding form a parallel resonant tank circuit for providing a steady state sinusoidal current flow in the deflection winding. When used for deflection of the electron beam of a cathode ray tube, a substantially linear portion of the waveform of the sinusoidal current flowing in the deflection winding may be used to move the electron beam from left to right across the screen during the "trace" in-

terval. The remainder of the waveform of the sinusoidal current may be used for "retrace." Since the tank circuit requires only periodic energization to sustain steady state sinusoidal current flow, current consumption is held to a minimum. An S



portion of the waveform of the sinusoidal current may be used during the trace interval to correct for the pincushion distortion that would otherwise occur when cathode ray tubes having large deflection angles are used.

3,809,948

DISPLAY SYSTEMS

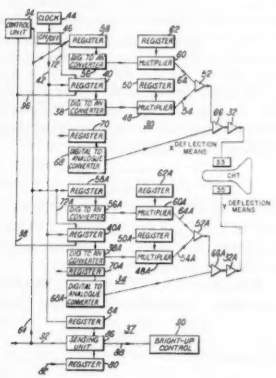
John Norman Chubb, Oxford, and Ernest Kennedy Sinton, Wantage, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed May 31, 1972, Ser. No. 258,445

Claims priority, application Great Britain, June 10, 1971, 27365/71

Int. Cl. H01j *29/70*

U.S. Cl. 315—27 GD **17 Claims**



A display system is disclosed, which is particularly suitable for character display on a cathode ray tube. Two analog signals are digitally generated and respectively and simultaneously applied to the X and Y deflection means of the tube. The magnitudes are progressively and linearly adjusted so that the beam spot moves over the screen along a predetermined raster of lines which is exactly predetermined and can be based on two accurately orthogonal axes. In this way, distortion due to the non-orthogonality of the *x* and *y* axes of the tube can be corrected for. The tube is associated with a data store which, for each character to be displayed, stores data indicative of the beam intensity at each point in the raster.

3,809,949

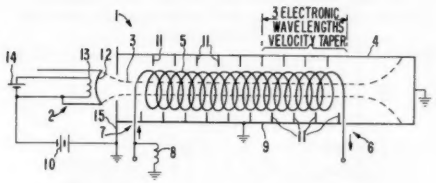
APPARATUS FOR INCREASING RF CONVERSION EFFICIENCY OF A TRAVELING WAVE TUBE

Allan W. Scott, Los Altos, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Feb. 20, 1973, Ser. No. 333,844

Int. Cl. H01j *25/34*

U.S. Cl. 315—3.5 **12 Claims**



The RF conversion efficiency of a vane loaded helix derived slow wave circuit, such as a ring and bar, meander line, double meander line, helix, cross wound helix, double ring and bar or a ladder line circuit, is increased while maintaining broad band operation; in a first embodiment, by increasing the degree of penetration of the vanes into the slow wave circuit at the output end of the tube for introducing a frequency dependent velocity taper and, in a second embodiment, by electrically isolating the aforementioned loading vanes for d.c. potential at the output end of the tube and applying a higher beam voltage to these circuit loading vanes.

3,809,950

MAGNETRON

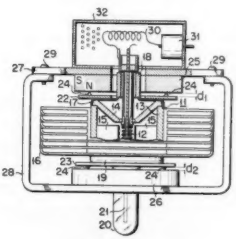
Tokujo Koinuma, Kawasaki, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Feb. 14, 1973, Ser. No. 332,499

Claims priority, application Japan, Feb. 18, 1972, 47-19424[U]

Int. Cl. H01j *25/50*

U.S. Cl. 315—39.71 **4 Claims**



A magnetron includes an oscillating section having an electron radiating cathode and a cylindrical anode; an output section having an antenna inserted therein; and a pair of doughnut-shaped magnets disposed one on the end surface of the anode and one on the other end surface thereof in a manner to be coaxial with the anode. Between the end surfaces of the oscillating section and the magnets a pair of shim plates are arranged. The shim plate has a plurality of projections point-contacted with the magnet.

3,809,951

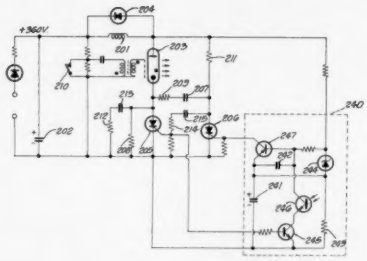
ELECTRONIC PHOTOFLASH

Zoltan Vital, Brussels, and Jean Orban, Clabecq, both of Belgium, assignors to Ponder & Best, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 244,279, April 14, 1972, which is a continuation-in-part of Ser. No. 799,554, Feb. 13, 1969, abandoned, and a continuation-in-part of Ser. Nos. 17,634, March 9, 1970, and Ser. No. 174,096, Aug. 13, 1971. This application Sept. 11, 1972, Ser. No. 287,638

Int. Cl. H05b

U.S. Cl. 315—149 **16 Claims**



There is disclosed herein an electronic photoflash circuit including means for rapidly and accurately terminating a light flash and/or blocking discharge of a photoflash energy storage capacitor. The circuit involves use of a switching device connected in series with a photoflash tube wherein the beginning of ionization of the photoflash tube affects turn on one of the series switching device. Additionally, the circuit includes means for activating a light sensing circuit, and there is disclosed a novel form of optical attenuator useful in conjuction with the light sensing circuit.

3,809,952

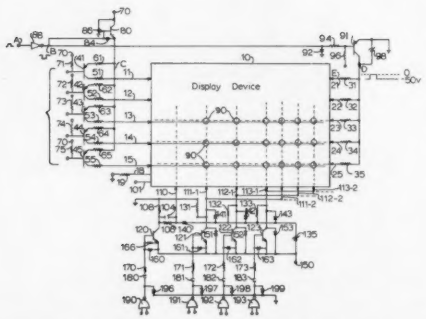
APPARATUS REDUCING THE POWER REQUIRED FOR SCANNED DISPLAY DEVICES

Mark F. Eisenberg, North Plainfield, and William J. Harmon, Jr., Middlesex, both of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Filed June 21, 1971, Ser. No. 154,731

Int. Cl. H05b *39/00*

U.S. Cl. 315—169 TV **4 Claims**



Apparatus is disclosed reducing the power dissipated internally and externally during the scanning of display devices having a plurality of gas-filled cells and including gas communication channels extending between adjacent columns of cells. In the illustrated display device, internal scanning of the display cells is accomplished by causing a preferential transfer of gaseous discharges from column to column in the device. The operating apparatus includes a sequential three-phase cathode driving circuit having a pre-biasing circuit which dissipates less power in its operation and is not interfered with during resetting of the panel. A pulse-operated control circuit is provided for controlling the current in scan anodes in the device in synchronism with the cathode control signals. The current and power applied to the cells each cycle is reduced after initial activation of the cells to a lower sustaining level.

ERRATUM

For Class 315—241 see:
Patent No. 3,809,954

3,809,953

METHOD OF AND DEVICE FOR CONTROLLING OPTICAL CONVERSION IN SEMICONDUCTOR

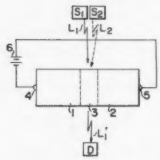
Jun-Ichi Nishizawa, Sendai, Japan, assignor to Semiconductor Research Foundation, Kawauchi, Japan

Continuation-in-part of Ser. No. 46,445, June 15, 1970, abandoned. This application May 1, 1972, Ser. No. 249,013

Claims priority, application Japan, June 18, 1969, 44-48119

Int. Cl. H011 *15/00*

U.S. Cl. 317—235 N **20 Claims**



A method of and device for controlling optical conversion in which the electric charge distribution of a deep level impurity in the depletion layer of a semiconductor device is varied by directing light to the depletion layer or by injecting an elecric current in the depletion layer. As a result the width of the depletion layer and/or the electric field in the depletion layer are varied which lead to the variation in light transmission, photovoltaic power or photocurrent.

3,809,954

ELECTRONIC FLASH UNIT WITH AUTOMATIC FLASH TERMINATION OF INCREASED RELIABILITY

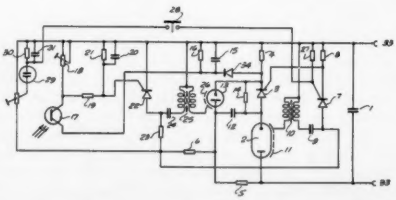
Heinz Engelstatter, Bad Soden, Germany, assignor to Braun Aktiengesellschaft, Frankfurt, Germany

Filed June 15, 1972, Ser. No. 262,972

Claims priority, application Germany, June 23, 1971, 2131057

Int. Cl. G03b *15/05*

U.S. Cl. 95—10 CE **10 Claims**



To a conventional electronic flash unit having a flash tube, a release contact, an exposure measuring circuit furnishing an

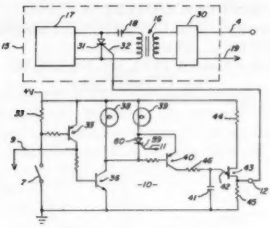
exposure control signal and a terminating switch connected in series with the flash tube for automatic flash termination under control of the exposure measuring circuit, is added a first auxiliary switch connected in parallel with the capacitor storing the flash energy and connected to the release button for switching the terminating switch to the conductive state upon activation of the release button, and a second auxiliary switch connected to the output of the exposure measuring circuit for switching the terminating switch to the blocked state when the exposure control signal signifies a predetermined exposure.

3,809,955

SAFETY CIRCUIT FOR ELECTROSTATIC SPRAY GUN

Ronald F. Parson, St. Paul, Minn., assignor to Graco Inc., Minneapolis, Minn.

Filed Mar. 26, 1973, Ser. No. 344,685
Int. Cl. H02h *3/08, 7/12*
U.S. Cl. 317—3 **17 Claims**



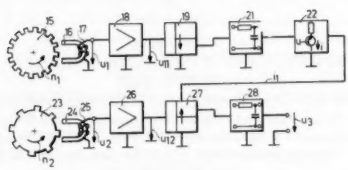
An improved high voltage sensing and disabling circuit having a desensitizing feature to compensate for initial turn-on of an electrostatic spray gun is disclosed. The circuit provides a safeguard against excessive electrostatic spray gun ionizing currents, but automatically compensates for current surges caused by line charging during turn-on.

3,809,956

APPARATUS FOR ELECTRICAL DETERMINATION OF DIFFERENTIAL SPEED OF TWO ROTATING MEMBERS

Rainer Burkel, Schwieberdingen, and Hans Scheyhing, Hofingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 10, 1972, Ser. No. 295,861
Claims priority, application Germany, Nov. 26, 1971, 2158602
Int. Cl. H02p *5/16*
U.S. Cl. 317—6 **11 Claims**



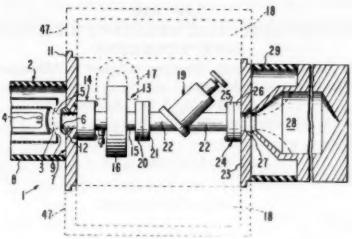
A steady voltage is generated which is proportional to the quotient of the rotational rates of the two members for which it is desired to determine the slip rate. The apparatus may be used to effect coupling of the two members when the slip rate falls to or very near zero, particularly in a motor vehicle transmission. The control voltage is generated by first generating, through electrical sensors and circuits, a train of pulses having a repetition rate proportional to the rotational rate of one of the members and having a pulse width inversely proportional to the rotational rate of the other of the members, and then integrating the pulse train to provide a steady control voltage.

3,809,957

METHOD FOR PRESERVING ELECTRON GUN ASSEMBLIES

George V. Miram, Daly City, and Samuel W. Woolsey, Los Altos, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Division of Ser. No. 803,774, March 3, 1969, Pat. No. 3,585,445. This application Mar. 4, 1971, Ser. No. 121,117
Int. Cl. H01j *7/14*
U.S. Cl. 313—7 **4 Claims**



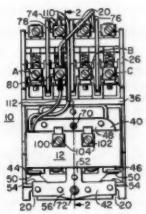
A method for preserving electron gun assemblies is disclosed. In the method, an electron gun assembly, including a thermionic cathode emitter, is assembled in a vacuum envelope structure. The envelope is evacuated, baked out, and the cathode processed in the conventional manner to activate the cathode. Beam voltages are applied to draw beam current from the gun to test proper operation thereof. These tests may include a test of beam diameter and perveance in the presence of a beam focusing magnetic or electric field. The processed and tested electron gun is then valved off from the rest of the envelope by means of a valve connected to the envelope portion including the electron gun. The valved off gun is then detached from the vacuum envelope for preserving the electron gun in an operable condition for subsequent use in a second vacuum envelope structure.

3,809,958

DIRECT CURRENT ELECTROMAGNETIC SWITCH

Charles F. Meyer, and Kenneth W. Retzer, both of Wauwatosa, Wis., assignors to Square D Company, Park Ridge, Ill.

Filed Nov. 6, 1972, Ser. No. 304,166
Int. Cl. H02h *7/22*
U.S. Cl. 317—11 E **10 Claims**



An electromagnetically operated device having an alternating current magnet structure operated by direct current. The electromagnet includes a laminated magnet iron armature, a laminated magnet iron stationary magnet, and a coil winding which is positioned to induce a magnet flux in the armature and the magnet which causes the armature to be picked up

and move from a position where it is spaced from the magnet to a sealed position where it engages the magnet when the coil is energized from a direct current source by a pick-up current. A pair of closed contacts which open as the armature moves toward the sealed position, cause a resistor to be included in the coil circuit to reduce the current flow through the coil when the armature is in the sealed position. The resistor, which is of the thick film type, is mounted between the rear side of the device and a panel on which the device is mounted so the panel aids in dissipating heat generated in the resistor when the coil is energized. A capacitor in a control circuit for the device is charged by the pick-up current and supplies current energy to the coil when the contacts initially open to assure movement of the armature to the sealed position.

3,809,959

CIRCUIT INTERRUPTING MEANS FOR HIGH-VOLTAGE DIRECT CURRENT

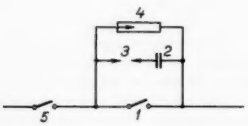
Walter Pucher, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Mar. 14, 1973, Ser. No. 341,059

Claims priority, application Sweden, Mar. 21, 1972, 3619/72

Int. Cl. H02h *7/22*

U.S. Cl. 317—11 E **5 Claims**



A high voltage direct current interrupting arrangement consists of two electrical switches connected in series. One of the switching devices is a commutating circuit breaker which is connected in parallel with a series connection of a capacitor and a spark gap. A surge diverter is also connected in parallel with the commutating circuit breaker. The surge diverter takes over the current and breaks it during a breaking operation whereafter the other switching device is opened to isolate the circuit.

ERRATUM

For Class 317—12 see:
Patent No. 3,810,252

3,809,960

HEATING INDICATING DEVICE OF AN ELECTRIC MOTOR

Alain Francois Jossic, Belfort, France, assignor to Societe Honeywell Bull., Paris, France

Filed Mar. 6, 1973, Ser. No. 338,491

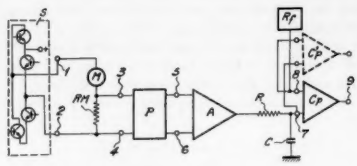
Claims priority, application France, Mar. 13, 1972, 72.08659

Int. Cl. H02h *7/08*

U.S. Cl. 317—13 B **10 Claims**

Heating indicating device for the rotor of an electric motor notably using direct current.

According to the invention, this device is characterized in that it comprises a resistor mounted in series with said rotor, means reading the voltage across said resistor and supplying an output voltage corresponding to the square of the input voltage, means simulating the thermal exchange time constant between said rotor and its environment and causing progression, in time, of said output voltage in accordance with said time constant, means for emitting a reference voltage representative of the maximum allowable temperature that must not be exceeded for the rotor and means for comparing



this reference voltage and the output voltage of the means simulating the time constant.

Supervision of motor, notably in printing machines.

3,809,961

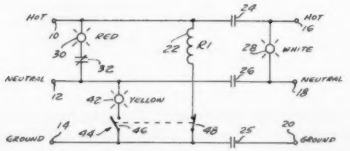
ELECTRIC OUTLET SENTINEL

Thomas N. Kershaw, West Coxsackie, N.Y., assignor to Albany International Corp., Albany, N.Y.

Filed May 25, 1972, Ser. No. 256,763

Int. Cl. H02h *3/20*

U.S. Cl. 317—18 B **1 Claim**



A relay coil is connected across the hot and ground wires of a single phase three wire AC circuit for establishing a current flow through the ground wire when the ground is continuous. The coil senses the current and causes pairs of normally open relay contacts to close. Said pairs of contacts are connected in series with each of the wires of the AC circuit for connecting the circuit to a load. The contacts remain closed so long as the ground wire of the three wire AC circuit remains continuous and connected to ground. If a ground fault occurs, that is the ground wire of the circuit ceases to be connected to ground, the current through the coil ceases and the contacts open. Appropriate indicators are controlled by additional relay contacts or switches to indicate the existence or nonexistence of a ground fault. Should the polarity of the AC circuit be reversed, current will not flow through the coil and the contacts will remain open rendering the circuit inoperative.

3,809,962

GROUND CURRENT POWERED GROUND FAULT PROTECTOR

William Keith Brown, and Harris I. Stanback, both of Lexington, Ky., assignors to Square D. Company, Park Ridge, Ill.

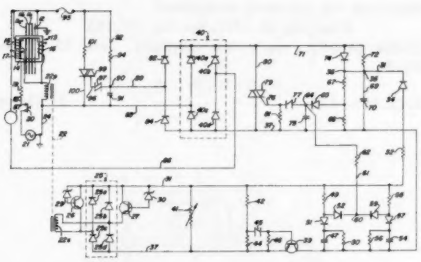
Continuation of Ser. No. 224,107, Feb. 7, 1972, abandoned. This application Apr. 13, 1973, Ser. No. 351,068

Int. Cl. H02h *3/26*

U.S. Cl. 317—18 D **13 Claims**

An equipment protection system uses a differential transformer to detect ground faults and energizes a shunt trip coil of a circuit breaker solely with energy induced in secondary windings of the differential transformer by the fault current. Uniform time delay is provided regardless of the magnitude of the fault current and means are provided to prevent partial timing out of the time delay circuit at fault currents below the minimum tripping point. The system provides instantaneous

tripping of the circuit breaker upon occurrence of large ground fault currents. A switching triac avalanches into conduction upon occurrence of a relatively large ground fault current to protect circuit components from damage while still permitting energization of the shunt trip coil.

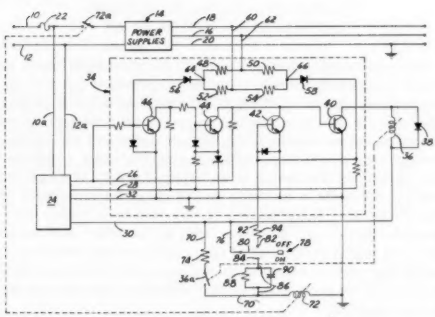


3,809,963

POWER SUPPLY SYSTEM CONTROL CIRCUIT

Homer F. Hutchinson, Wheaton, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed June 4, 1973, Ser. No. 367,076
Int. Cl. H02h *5/00*
U.S. Cl. 317—22 **15 Claims**



A power supply system is disclosed which includes a control system that utilizes a sensing circuit to monitor the output load values and to automatically turn off the system if the values are outside of a predetermined range. The control system includes a manually operable switch which will initially immediately turn the power supply on as well as off, and incorporates a delay network which prohibits repeatedly turning the power supply on and off within a predetermined time period. Attempts to again turn the system on within the time period will result in resetting the delay network, causing the operator to wait the entire time period before the system can be again turned on.

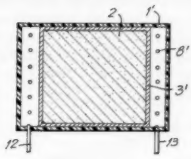
3,809,964

ELECTRICALLY ACTUATED PRIMING DEVICE

Bernard Ceyrat, Bourges, France, assignor to Etat Francais represente Par le Ministre Charge de la Defense Nationale Delegation Ministerielle pour l'Armement, Paris, France

Filed Nov. 10, 1972, Ser. No. 305,582
Claims priority, application France, Nov. 12, 1971, 71.4568
Int. Cl. C06c *5/06*
U.S. Cl. 102—28 R **2 Claims**

A priming device actuated by electrical induction and comprising a primer containing a pyrotechnical substance, an armature placed in contact with or proximate to the pyrotechnical substance and an inductor for producing an alternating magnetic field which causes electrical heating of the armature by induction. The armature can be separate from or formed of all or part of a casing containing the pyrotechnical substance.

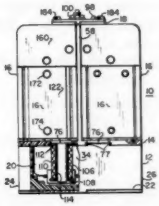


3,809,965

SOLID STATE RELAY AND TIMER HOUSING MEANS

Clarence N. Groth, Mequon; James N. Hempel, Milwaukee; Robert A. Wieczorek, Glendale; Charles F. Meyer, Wauwatosa, and Robert G. Cook, Cedarburg, all of Wis., assignors to Square D Company, Park Ridge, Ill.

Filed Mar. 26, 1973, Ser. No. 345,162
Int. Cl. H02b *1/04*
U.S. Cl. 317—113 **11 Claims**



A solid state relay structure capable of replacing an electromagnetically operated relay. The relay includes a basic support on which up to four switching modules may be easily mounted. The basic support provides a housing for a printed circuit board which has circuits arranged to cause two of the switching modules to provide an instantaneous type switching contact operation and two of the modules to provide an OFF delay or ON delay type of switching contact operation. The basic support has a readily accessible adjustment knob which will permit the timing interval of the relay to be easily changed. Isolation between the solid state control circuit and the power switching circuits in the four modules is provided by reed switches in the switching modules and four magnet coil windings that are carried by the basic support structure.

3,809,966

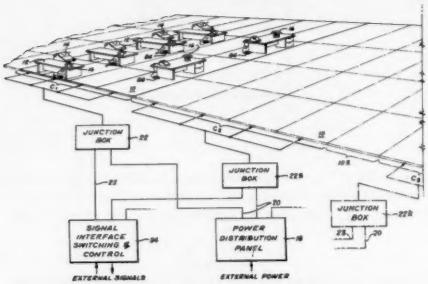
SECTIONAL LAMINATED STRUCTURAL SYSTEM FOR AREA DISTRIBUTION OF ELECTRICAL POWER AND SIGNAL ENERGY

C. Barry Tirrell, Duxbury, and Walter L. Reid, Jr., Mattapoisett, both of Mass., assignors to Dole Electro-Systems, Incorporated, Palo Alto, Calif.

Continuation-in-part of Ser. No. 191,392, Oct. 21, 1971. This application July 5, 1972, Ser. No. 269,214
Int. Cl. H02b *1/04*
U.S. Cl. 317—117 **22 Claims**

A sectional laminated structure system for transmitting electrical power and signal energy over an area so that devices using power and signal energy can be coupled to the structure at randomly selected locations thereon. The system is comprised of a series of interconnected panels, each panel being a

rigid or semi-rigid combination of laminated elements including electrically conductive layers for a power carrying subsystem and/or transmission means for a signal distribution subsystem. The conductive layers are separated by a dielectric



material. Means are included for connecting the panels to provide power and signal transmission continuity, and other means provide for isolating groups of panels from other panels to form selected areas of power and signal distribution.

3,809,967

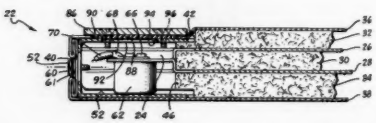
INTERCONNECTION ASSEMBLY FOR PANEL SECTIONS OF AREA TYPE ELECTRICAL DISTRIBUTION SYSTEM

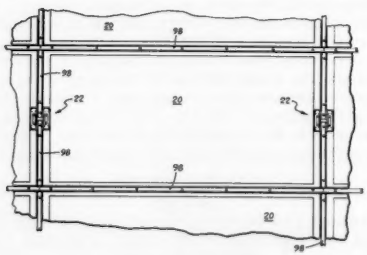
C. Barry Tirrell, Duxbury, and George B. Williams, New Bedford, both of Mass., assignors to Dole Electro-Systems, Incorporated, Palo Alto, Calif.

Filed Nov. 24, 1972, Ser. No. 309,067

Int. Cl. H02b 1/02

U.S. Cl. 317—117 **12 Claims**





Panel sections having internal conductive layers for transmitting electrical power or signal energy are interconnected to form an area type distribution system by flexible conductors connected to tab portions of the panel conductive layers extending into a flush enclosure formed by a recess on the side edge of each panel. An extensible and flexible tubular member retained at its opposite ends by the enclosures of adjacent panel sections provides a protective and shielded passage for the conductors between panel sections and also allows for dimensional variations between installed, adjacent panel sections.

3,809,968

PORTABLE CURRENT SUPPLY DEVICE FOR FLASH BULBS AND HOUSING MEANS

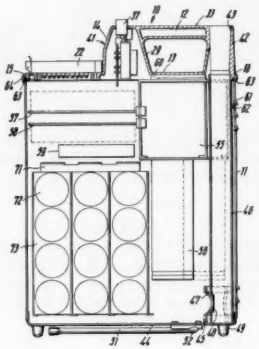
Walter Haberthur, Hofstetten, Switzerland, assignor to Bron Elektronik AG, Allschwil, Switzerland

Filed Jan. 23, 1973, Ser. No. 326,153

Claims priority, application Germany, Jan. 25, 1972, 2203337

Int. Cl. H02b 1/10

U.S. Cl. 317—120 **21 Claims**



A current supply device, especially for photoflash lamps, in which a generally cubicle container is provided open at the top and having a cover of electrical insulating material closing the open top. The cover carries connectors for connecting the device to cables leading to photoflash lamps and also carries control elements for controlling the device and a connector for connecting the device to an external source of electrical energy. A handle is provided on the cover for movement of the device and is connected at one end to a raised intermediate portion of the cover and at the other end to an elevated region at one end of the cover. A metal hood is provided that can be mounted on the cover to cover the aforementioned connectors and control elements while leaving the handle exposed.

3,809,969

PROBE CONNECTOR RECEPTACLE DEVICE FOR AREA TYPE ELECTRICAL DISTRIBUTION SYSTEM

Lon A. Williams, Wareham, and George B. Williams, New Bedford, both of Mass., assignors to Dole Electro-Systems Incorporated, Palo Alto, Calif.

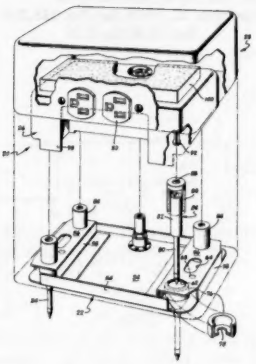
Filed Jan. 30, 1973, Ser. No. 328,144

Int. Cl. H02b 1/10

U.S. Cl. 317—120 **18 Claims**

A receptacle device for use with an area type electrical power and/or signal distribution system that utilizes a laminated structure having conductive layers spaced apart by dielectric layers comprises a generally planar base unit for supporting a plurality of probe elements in an upright and spaced apart arrangement to enable them to be simultaneously driven into the laminated structure of said system. A housing unit removably attached to the base unit includes an electronics package with connector pins in contact with said probe elements that are connected to internal circuit means secured within the package, and a resilient, shock-absorbing cover means surrounding the electronics package. The housing unit also supports exterior plug-in receptacle means connected to the circuit means and adapted to receive conven-

tional plug-in connectors so that when the probe elements are installed within a laminated structure in contact with said conductive layers an electrical path is provided through them to said connector pins, through said circuit means and to said exterior receptacle means to its plug-in connector.

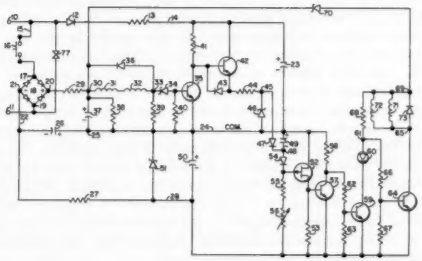


3,809,970

SOLID STATE TIMING CIRCUIT

Robert G. Cook, Cedarburg, Wis., assignor to Square D Company, Park Ridge, Ill.

Filed Mar. 26, 1973, Ser. No. 345,163
Int. Cl. H03k 17/28; H01h 47/18
U.S. Cl. 317—141 S 12 Claims



A solid state circuit for controlling the energization of four magnet coils as may be used in a solid state timing relay. The circuit is arranged so two of the four coils are immediately energized when a first direct current source is connected to the circuit and the remaining two magnet coils are energized or remain energized for a predetermined time interval after the first direct current source is energized or de-energized, respectively. The circuit also is connected to a second direct current source that is continuously energized and during the timing period applies a reverse potential in series with a previously charged timing capacitor to provide consistent accurately timed periods.

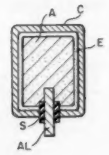
3,809,971

MICROFARAD RANGE VARACTOR

Stephen E. Hluchan, Newton, and Gerard J. Villani, Needham, both of Mass., assignors to Norton Company, Worcester, Mass.

Filed Mar. 17, 1972, Ser. No. 235,663
Int. Cl. H01g 7/06, 9/05, 7/04
U.S. Cl. 317—230 9 Claims

A new class of varactors, affording total capacitance in the 0.01 to 1000 microfarad range and above and capacitance change of several percent per volt of bias change, and a total range of capacitance change of over 100%, utilizing thin layer, non-stoichiometric, valve metal oxide dielectrics, modified through materials processing to afford a mixed semiconductive-insulating characteristic, the dielectric being in the form of a thin film sandwiched between electrodes. A mixed anodic oxide coating contained on the surface of a molybdenum-niobium binary alloy electrode is a preferred and distinctly advantageous dielectric. The varactor device of the invention has an oxide film thickness of 20 to 10,000 angstrom units, a capacitance ratio (maximum to minimum capacitance) of at least 2. The invention also comprehends new low frequency control systems incorporating the capability of variable capacitance in response to variation of bias voltage.

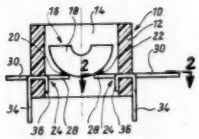


3,809,972

ROTARY PLATE CAPACITOR WITH STATOR CONNECTIONS

Henning Wick, Nagold, Germany, assignor to Paul Dau & Co., Nagold, Germany

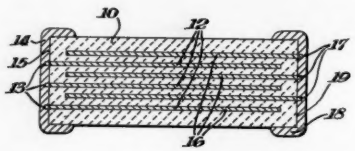
Filed Aug. 23, 1973, Ser. No. 390,789
Claims priority, application Germany, Aug. 25, 1972, 2241967
Int. Cl. H01g 5/06
U.S. Cl. 317—253 11 Claims



A stator construction for a rotary plate capacitor apparatus, including a housing having opposed pairs of side and end walls, at least portions of said side walls being formed of a synthetic plastic material. The capacitor apparatus includes at least one stator that is supported between the side walls by a pair of connecting members each of which is formed from a conductive blank. Each connecting member includes a first coupling portion that extends through an opening contained in the synthetic plastic portion of the housing, whereby the connecting member is fastened to the housing in an insulated manner. The connecting member includes also second and third portions that extend beyond the housing side wall for electrical connection with the stator and with the corresponding electrical lead, respectively. In one embodiment, the opening in which the connecting member is fastened is a horizontal opening contained in the side wall of the housing, while in a

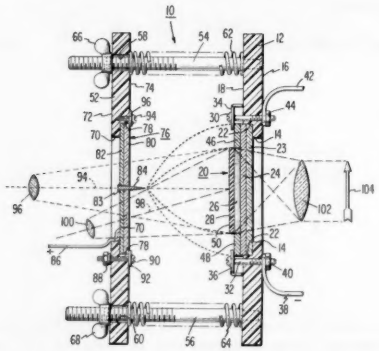
second embodiment, the opening is a vertical opening contained in a horizontal flange provided on the inner surface of each side wall of the housing.

3,809,973
MULTILAYER CERAMIC CAPACITOR AND METHOD OF TERMINATING
Thomas P. Hurley, Pownal, Vt., assignor to Sprague Electric Company, North Adams, Mass.
Filed July 6, 1973, Ser. No. 377,007
Int. Cl. H01g 1/14
U.S. Cl. 317—258 3 Claims



In a multilayer ceramic capacitor having base metal electrodes, a thin film of gold covers the electrode edges that are flush with the ceramic body faces. The capacitor terminals consist in silver coverings that are bonded to each of these faces and the gilded electrode edges. A method of immersion plating is employed to accomplish a selective deposition of gold on only the electrode edges.

3,809,974
CORONA DISCHARGE DEVICE
Robert Allen Gange, Belle Mead, and Charles Steinmetz, Mercerville, both of N.J., assignors to RCA Corporation, Princeton, N.J.
Filed Feb. 26, 1973, Ser. No. 335,524
Int. Cl. H01t 19/04
U.S. Cl. 317—262 A 1 Claim

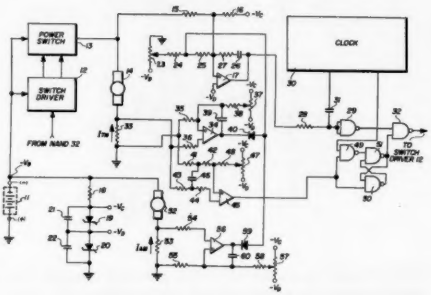


To provide a substantially uniform electrostatic charge on a relatively large area of a surface at ambient pressure, a novel corona discharge device comprises a transparent electrically conductive plate and a pointed member of electrically conductive material extending perpendicularly from the center of the plate and spaced from the surface. A source of high voltage is connected between the plate and the surface.

ERRATUM

For Class 318—23 see:
Patent No. 3,810,253

3,809,975
MOTOR SPEED CONTROL APPARATUS FOR AN ELECTRICALLY POWERED VEHICLE
John H. Bartels, 160 Poplar, Elmhurst, Ill.
Filed Jan. 22, 1973, Ser. No. 325,319
Int. Cl. H02p 5/16
U.S. Cl. 318—39 8 Claims

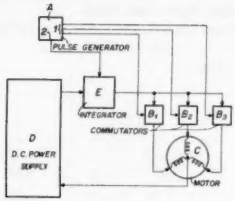


A motor speed control apparatus for automatically reducing the speed of an electrically powered vehicle (e.g., a riding lawnmower) responsive to the traction motor and/or an auxiliary motor being overloaded is disclosed. More particularly, battery means comprising a DC battery are included for applying DC potential to the traction motor and the auxiliary motor (e.g., turning a cutting blade) which may be overloaded due to excessive vehicular speed. The vehicle's speed is determined by the DC potential applied to the traction motor while the current drawn by either motor is determined by the torque required (i.e., loading) of that motor. Means for stabilizing the DC potential applied to the traction motor are provided to maintain the vehicle's speed at the level selected by the operator. Whenever the current drawn by either the traction motor or the auxiliary motor exceeds a predetermined threshold, current limiting means are effective to automatically reduce the DC potential applied to the traction motor until the current drawn by both motors is below the threshold. Moreover, high-speed comparator means are included to monitor the instantaneous current drawn by the traction motor so that the stabilizing means are disabled whenever the instantaneous current exceeds a predetermined level.

3,809,976
METHOD AND APPARATUS FOR SYNCHRONIZING A THREE PHASE MOTOR
Jean-Jacques Bessire, Bienne, Switzerland, assignor to H. et J. J. Bessire, S.A., Bienne, Switzerland
Continuation of Ser. No. 40,770, May 27, 1970, abandoned.
This application Apr. 20, 1972, Ser. No. 245,873
Claims priority, application Switzerland, June 4, 1969, 8474/69
Int. Cl. H02p 5/46
U.S. Cl. 318—78 5 Claims

The method and apparatus for synchronizing a three phase motor with a master motor or other device includes generating three phase voltage pulses which are controlled in frequency by the speed of rotation of the master motor and which vary in amplitude as a function of speed variations of said master motor. A pulse generator driven by the master motor provides pulses which are controlled in frequency by the speed of the master motor and directs such pulses as three phase voltage pulses to three commutating units which selectively feed a winding of a three phase motor. Each commutating unit

receives voltage pulses of one phase, and upon receipt of such pulses, provides a signal to the associated motor winding. The



amplitude of this signal is controlled as a function of an integrated signal derived from integrating pulses from the pulse generator.

3,809,977

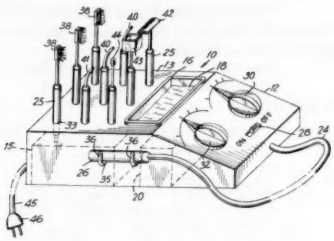
ULTRASONIC KITS AND MOTOR SYSTEMS

Lewis Balamuth, New York; Arthur Kuris, Riverdale, and Manual Karatjas, Glen Oaks, all of N.Y., assignors to Ultrasonic Systems, Inc., Farmingdale, N.Y.

Filed Feb. 26, 1971, Ser. No. 119,298

Int. Cl. H01v *7/00*

U.S. Cl. 318—116 **34 Claims**



The invention discloses various embodiments of an ultrasonic kit adapted to be used in the home or for industrial purposes, as well as a variety of ultrasonic motor constructions and ultrasonic converter designs to be used either individually or in combination with each other. The ultrasonic motor is generally of a piezoelectric material having a removable tip or of a design in which the complete motor is contained in a housing, which housing has electrical contact means adapted to be plugged into an adapter which, in turn, is connected to a converter. The motor may be designed such that frequency sensing is provided therein and the feedback signal is utilized by the generator to adjust itself thereto.

3,809,978

CIRCUIT FOR ELECTRICALLY-OPERATED VEHICLE

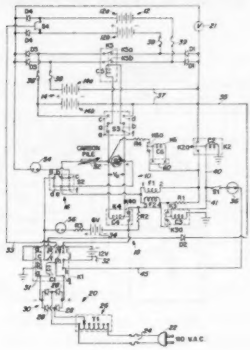
Joseph R. Zubris, 5 Glover Pl., Dorchester, Mass.

Filed Sept. 8, 1972, Ser. No. 287,563

Int. Cl. H02p *7/06*

U.S. Cl. 318—139 **16 Claims**

A DC motor circuit powered by two banks of automobile storage batteries includes an armature, a pair of field windings which are essentially connected in parallel with each other and in series with the armature of the motor, an excitation circuit coupled to the pair of field windings for establishing a potential thereacross and having its own DC power source, a switch for operating the DC motor in either the forward or reverse direction and circuit means including a full wave rectifier bridge for recharging the two banks of batteries. The circuit may also include means for switching from a parallel connection of the banks of storage batteries wherein maximum current is available for starting and low speed operation, to a series connection for full voltage high speed operation. With the circuit of this invention greater efficiency of the motor is



obtained primarily by means of the field excitation circuit, and where limited operating range is acceptable the circuitry enables a vehicle to be powered by readily available automotive batteries and still have exceptionally good performance.

3,809,979

MOTOR BRAKE CIRCUIT

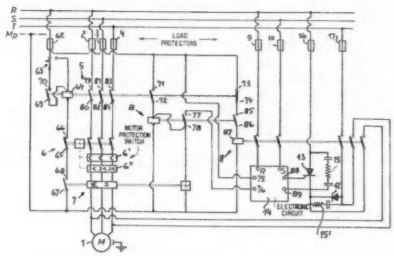
Karl-Heinz Zarth, Remscheid, Germany, assignor to "Rhewum" Rheinische Werkzeug-und Maschinenfabrik GmbH, Remscheid, Germany

Filed Dec. 11, 1972, Ser. No. 313,669

Claims priority, application Germany, Dec. 30, 1971, 2165471

Int. Cl. H02p *3/20*

U.S. Cl. 318—212 **6 Claims**



In a direct current brake circuit for braking a three-phase, short-circuit rotor motor, a thyristor and diode are connected between the motor and its three phase supply, via controllable switches, overvoltage protection components are connected to the thyristor and the diode, and protective circuitry is connected to cause the thyristor and diode to be connected to the motor stator and to the motor supply, and the braking voltage to be applied to the motor stator, under no load conditions.

3,809,980

PHASE ADAPTER

Frank O. Nottingham, Jr., 814 Wesley Dr., N.W., Atlanta, Ga.

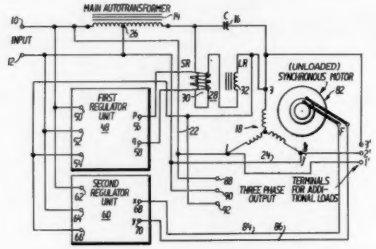
Filed Feb. 5, 1973, Ser. No. 329,748

Int. Cl. H02p *1/44*

U.S. Cl. 318—220 R **6 Claims**

A device is disclosed for converting single-phase power to three-phase power. The device includes an autotransformer

and a variable impedance device for adjusting the magnitude and phase of the autotransformer output. A first regulator circuit, including comparison, amplifier, phase shifting and SCR stages, is provided to regulate the impedance of the variable



impedance device. A second regulator circuit, including comparison, control and power output stages, is also included to provide the device with the capability of compensating for changing power factors in three-phase loads coupled to it.

3,809,981

EXPOSURE DETERMINING DEVICE

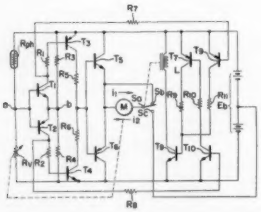
Osamu Maida, Tokyo, Japan, assignor to Nippon Kagaku K.K., Tokyo, Japan

Filed Nov. 2, 1972, Ser. No. 303,233

Claims priority, application Japan, Nov. 29, 1971, 46-96140

Int. Cl. G05d *25/02*

U.S. Cl. 318—294 **5 Claims**



An exposure determining device comprises a bridge circuit which includes at least a photoelectric element for receiving light from an object to be photographed and a variable resistor for controlling the balance of the bridge circuit and associated with exposure factors. The device further comprises a bridge balance detecting circuit producing one of first and second signals upon unbalance of the bridge circuit, and an electric motor rotatable in forward and reverse directions by first and second driving circuits operable in response to the first and second signals, respectively. The motor is associated with the resistor in such a manner that the resistance value of the resistor is decreased during the rotation of the motor in one direction and is increased during the rotation of the motor in the other direction. The opposite terminals of the motor may be short-circuited by a short-circuiting circuit. A relay circuit is provided for closing the first and second driving circuits in response to the first and second signals, respectively, and for closing the short-circuiting circuit upon balance of the bridge circuit.

3,809,982

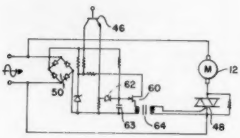
CENTRIFUGE SPEED CONTROL

Kenneth J. Cook, Oak Park, Mich., assignor to William Beaumont Hospital, Royal Oak, Mich.

Filed Mar. 5, 1973, Ser. No. 337,956

Int. Cl. H02p *5/16*

U.S. Cl. 318—313 **5 Claims**



An electro-optical system for measuring and controlling the rotational speed of a centrifuge. The rotational speed is optically sensed and converted into an electrical signal for comparison with a signal indicative of the desired speed. The result of the comparison is optically coupled to control the occurrence and duration of a signal to a motor which rotates the centrifuge. The optical coupling electrically isolates the centrifuge from the measuring system. An optional digital readout may be utilized to indicate rotational speed.

3,809,983

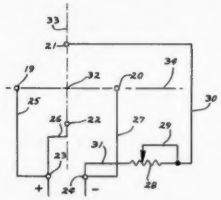
VARIABLE SPEED MOTOR

Peter Walker, Jr., Brooklyn Park, Minn., assignor to Electro-Craft Corporation, Hopkins, Minn.

Filed Nov. 8, 1972, Ser. No. 304,766

Int. Cl. H02p *5/06;* **H02k** *23/04*

U.S. Cl. 318—340 **10 Claims**



A controlled speed direct current motor in which the magnitude of the flux field in which the motor armature is operative is controlled in accordance with the energization of selected armature windings independently of the armature motor drive windings. This is accomplished by the use of separate independent brushes which are adapted to coact with the usual commutator on the rotating armature so as to simultaneously energize selected coil windings on the armature independently of the coil windings of the armature which are energized from a source of electrical current to cause the motor to operate. By utilizing a variable source of current for energizing the selected armature windings the field set up by the independent energization of the selected windings may be utilized to add to or subtract from the flux field normally utilized in the motor.

3,809,984

MOTOR SPEED CONTROL SYSTEM

Henri H. Hoge, Baltimore, Md., assignor to Allied Controls Company, Inc., Plantsville, Conn.

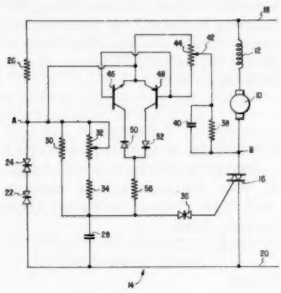
Filed Jan. 29, 1973, Ser. No. 327,668

• Int. Cl. H02p *5/16*

U.S. Cl. 318—244 **10 Claims**

The motor speed control system includes a bidirectional solid state switch which selectively connects and disconnects a

series AC motor to an AC power source during each half cycle of the power supply signal. The decaying armature current is sensed when the motor is disconnected from the power supply



at the end of each half cycle to determine the point in the next succeeding half cycle when the motor will be reconnected to the power supply.

3,809,985

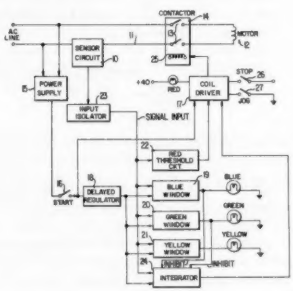
SOLID STATE A/C MOTOR PROTECTOR SYSTEM

Stephen R. Krause, and Nelson Hendler, both of Baltimore, Md., assignors to Pro-Lect, Inc., Baltimore, Md.

Filed Apr. 6, 1973, Ser. No. 348,668

Int. Cl. H02p *3/00*

U.S. Cl. 318—490 **10 Claims**



Apparatus and method for protecting a current drawing load, such as a motor, from excessive overload using logic to open a contactor between the source and load. Overlapping windows or ranges of load current magnitude show the conditions of load including trend of the load current. Threshold sensing of a predetermined level disconnects the load and so indicates. Single or multiple phases may be sensed and indicated while maintaining protective disconnect capabilities for single or multiphase loads.

3,809,986

POSITIONING DEVICE

Wim Visser, Rijswijk, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

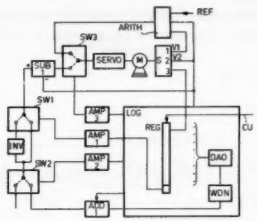
Filed Feb. 15, 1973, Ser. No. 332,735

Claims priority, application Netherlands, Feb. 18, 1972, 7202140

Int. Cl. G11b *21/08*; **G05b** *19/28*

U.S. Cl. 318—561 **12 Claims**

A positioning device is subjected to an acceleration during the first part of a step, whilst it is subjected to a deceleration during the second part. The tolerance in the maximum obtainable deceleration is not negligibly small. Therefore, the second part of the step is divided into three phases. In the first phase a standard deceleration is used which is less than the maximum deceleration; in the second phase the deceleration is maximum; in the third phase positional control is effected.



3,809,987

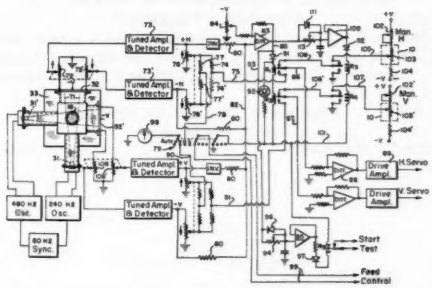
AUTOMATIC CENTERING OF OBJECTS IN NON-DESTRUCTIVE TEST APPARATUS

Peter J. Suhr, Garden City; Edward D. Spierer, Belle Harbor, and Girish P. Mhatre, Mount Vernon, all of N.Y., assignors to Magnetic Analysis Corporation, Mt. Vernon, N.Y.

Filed Apr. 6, 1973, Ser. No. 348,613

Int. Cl. G01b *11/26*

U.S. Cl. 318—640 **10 Claims**

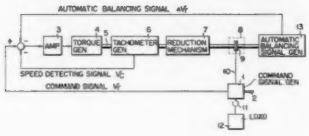


Pairs of light sources and light responsive strips sense horizontal (H) and vertical (V) displacements of a cylindrical object from the axis of the test head in a non-destructive test apparatus prior to entering the test head. An object occludes light from the central portion of each strip and signals from the ends of each strip are amplified, detected and differentially combined to form respective servo control signals. The light sources in H and V channels are pulsated at frequencies different from each other and from the power mains, and the H and V channels are tuned thereto. The relative values of the signals in the H and V channels are initially adjusted to produce null servo control signals when an object is properly centered in the test head, and thereafter a servo system moves the position sensing and test heads to maintain centering. Signals from the individual channels are utilized to detect the ends of an object. A front end signal starts the servo control and, after a delay, starts the testing. A rear end signal discontinues servo control until the object has passed through the test head and then recenters the head for the next object.

3,809,988
AUTOMATIC LOAD WEIGHT BALANCING SYSTEM

Kenro Motoda, Tokyo, and Kensuke Hasegawa, Yokohama, both of Japan, assignors to Motoda Electronics Co., Inc., Tokyo, Japan

Filed Aug. 16, 1973, Ser. No. 388,967
Claims priority, application Japan, Aug. 21, 1972, 47-82861
Int. Cl. G05b *11/28*
U.S. Cl. 318—646 **15 Claims**

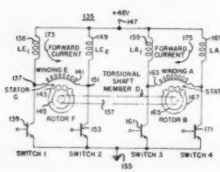


An automatic load weight balancing system includes an automatic balancing signal generating section comprising a clutch directly or indirectly coupled to a drive shaft, a triple position signal element having a suitable dead zone and proportional plus integral element for receiving as an input an output signal of the triple position signal element. An automatic balancing signal from the automatic balancing signal generating section is fed back to a control amplifier for controlling a driving section such as an electric motor, a hydraulic motor etc. to reduce a difference between the weight of a load and a driving force of the driving section to substantially zero, thereby automatically stopping the load in any position.

3,809,989
TORSIONAL STEPPING MOTOR AND EXCITER APPARATUS THEREFOR

John D. Hays, Troy; Harlen L. Baswell; Jerry A. Combs, both of Dayton, and Dale G. Brown, West Carrollton, all of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Oct. 12, 1971, Ser. No. 188,420
Int. Cl. H02n *29/02*
U.S. Cl. 318—696 **25 Claims**

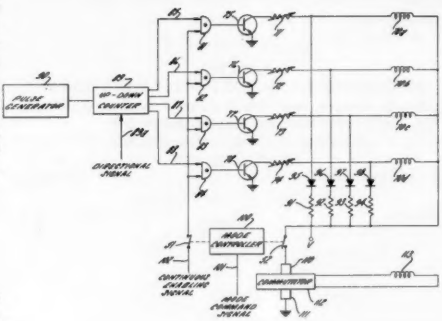


A stepping or indexing motor including plural electrical-to-mechanical energy transducer devices and a torsionally resilient coupling member for connecting transducer rotor members and for storing rotor member mechanical energy between rotor member movements; the torsionally resilient coupling member also providing starting torque for the stepping motor, and a means for separately driving the inertia component and the friction component of the stepping motor load; the torsionally resilient coupling member also providing a means for achieving high torque-to-inertia and torque-to-motor volume ratios in the motor. In one embodiment a transducer device takes the form of a rotor, a stator, and a winding carried at each end of the coupling member, with the output torque at a motor shaft being derived both from an adjacent transducer device and from energy stored in the torsionally resilient coupling member during a previous distorting of the coupling member; the alternate sequential energizing and deenergizing action subjecting the coupling member to a twisting action and a relaxing action during each step of operation. Electrical circuitry for controlling the flow of energy into the stepping motor and for removing energy from the motor magnetic circuit is also described along with a method for achieving a novel energy conserving release of rotor and stator magnetic engagement.

3,809,990
ELECTRIC MOTOR ADAPTED FOR BOTH STEPPING AND CONTINUOUS OPERATION

Benjamin C. Kuo, Champaign, and Kenneth S. Kordik, Rockton, both of Ill., assignors to Warner Electric Brake and Clutch Company, Beloit, Wis.

Filed July 27, 1972, Ser. No. 275,732
Int. Cl. H02k *37/00*
U.S. Cl. 318—696 **17 Claims**



An electric motor adapted for operation in either a stepping mode or a continuous mode. The stator assembly of the motor includes three magnetically independent stator sections spaced along a common axis with each section forming a plurality of magnetic poles of alternating polarity around the circumference thereof, and having a plurality of teeth with the teeth of each stator section circumferentially offset from the teeth of one of the other sections by distance equal to the tooth pitch divided by the number of stator sections. The stator assembly is wound with a multi-phase winding having a separate phase wound on each stator section and connected to a common d-c. voltage source. A plurality of transistors are connected in circuit with the voltage source and each phase of the stator winding for selectively energizing each of the phases independently of the other. A rotor assembly is journalled for rotation in all the stator sections and has teeth with the same pitch as the teeth on the stator sections, and has a winding wound between the rotor teeth. A commutator is connected from the d-c. voltage source to the rotor winding for converting d-c. current from the source to a-c. current in the winding when the rotor assembly is turned. Switches connect and disconnect the voltage source from the commutator, and a plurality of gates actuate the transistors to control the energization of the various phases of the stator winding. When the motor is operated in the continuous mode, all the gates are enabled at the same time to actuate all the transistors to continuously energize all the phases of the stator winding so as to effect continuous rotation of the rotor, while the commutator is connected to the voltage source. In the stepping mode, a pulse generator produces pulses which are fed to a counter for producing output signals sequentially on a series of output

lines for enabling the gates in sequence to turn on the transistors in sequence, thereby energizing the various phases of the stator winding in sequence to effect stepping rotation of the rotor assembly in synchronism with the pulses from the pulse generator.

3,809,991

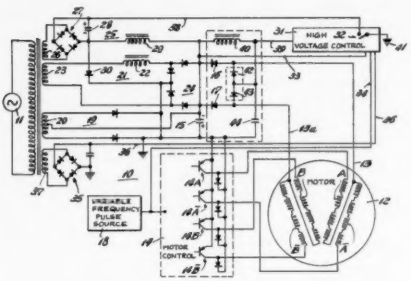
POWER SUPPLY FOR A STEPPING MOTOR

Robert James Loyzim, Coventry, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed Nov. 21, 1972, Ser. No. 308,316

Int. Cl. H02k 29/04

U.S. Cl. 318—696 **8 Claims**



A power circuit for supplying power to a DC energized variable speed stepping motor which for the higher speeds supplies essentially the same quantity of power as is used by the motor by supplying a variable width charge to a capacitor for each step taken by the motor with the capacitor charge being the voltage to the motor.

3,809,992

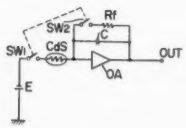
CIRCUIT FOR STORING A REPRESENTATION OF AN INCIDENT LIGHT QUANTITY IN A CAMERA

Masataka Negishi, Urawa, Japan, assignor to Mamiya Koki Kabushiki Kaisha, Tokyo-to, Japan

Filed Nov. 13, 1972, Ser. No. 305,823

Int. Cl. G03b 7/08; G01j 1/46

U.S. Cl. 95—10 CE **7 Claims**



A circuit for storing the amount of incident light in a camera which comprises: a photoelectric conversion circuit constituted by a photosensitive element and a resistor to produce a divided voltage corresponding to the amount of light incident on the camera; an integration circuit formed by an operational amplifier and a capacitor; and switching means operating to apply the divided voltage between the input and output terminals of the operational amplifier and then to terminate the application of the divided voltage, whereby the amount of light incident on the camera before the shutter is operated is stored and maintained in the integration circuit and is utilized to accurately control the operation of the shutter.

3,809,993

ELECTRIC BATTERY CHARGER

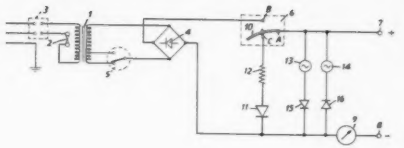
Frederick Charles Wheeler, Bath, England, assignor to Staples Developments Limited, London, England

Filed Dec. 13, 1972, Ser. No. 314,773

Claims priority, application Great Britain, Dec. 17, 1971, 58704/71

Int. Cl. H02j 7/04

U.S. Cl. 320—25 **12 Claims**



A battery charger incorporating an electric current heated thermo-operated switch which prevents the passage of charging current to a bettery connected to the charger the wrong way round, and acts to disconnect a battery intermittently when fully charged, when connected to right way round.

3,809,994

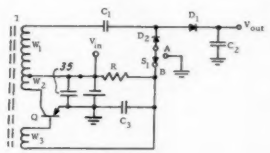
LOW POWER DC-DC CONVERTER EMPLOYING INTERMITTENT BURSTS OF BLOCKING OSCILLATIONS

George J. Ehni, III, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed June 19, 1972, Ser. No. 263,920

Int. Cl. H02m 3/28

U.S. Cl. 321—2 **3 Claims**



A battery powered electronic liquid crystal display includes converter circuitry for providing a d.c. voltage suitable for driving the liquid crystal display from a low voltage battery source. The converter includes a transformer having a variable inductance such that the output level can be controlled. In a preferred embodiment the transformer includes a cup core having mating halves. Notches or recesses are defined in a significant portion of the peripheral edge of each cup core component; thus the stored energy of the transformer can be varied by rotating one half of the cup core pair with respect to the other half.

3,809,995

MULTIPLE OUTPUT ALTERNATOR

James T. Hardin, Lambertville, Mich., assignor to Eltra Corporation, Toledo, Ohio

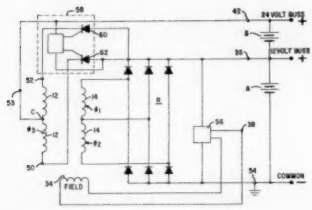
Division of Ser. No. 90,899, Nov. 19, 1970. This application Dec. 11, 1972, Ser. No. 314,184

Int. Cl. H02m 7/00

U.S. Cl. 321—5 **10 Claims**

A multiple output alternator having separate sets of power coils mounted on the stator adapted to be magnetically

excited by a rotor having a direct current fie'd coil is provided for a vehicle. The separate power coils being in a cooperative relation to give a distributed load condition when the rotor is driven by the variable speed power unit of the vehicle. Rectifying and voltage regulating means are provided for both sets of power coils to provide a high and low wattage power source, with the field coil of the rotor being supplied with a regulated D.C. voltage from the high wattage power source which also supplies power to the conventional electrical



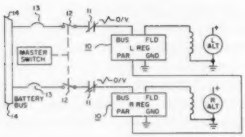
system of the automotive vehicle. For example, two power sources from an alternator are adapted to be used for charging batteries in a power system having two storage batteries which supply power to circuits requiring differing voltages, a relatively low voltage circuit which may include the high wattage power source and one of the batteries and a relatively high voltage circuit which is supplied by both storage batteries in series connection for special purposes such as starting of the variable speed power unit. More than two outputs could be supplied if desired.

3,809,996

LOAD BALANCING VOLTAGE REGULATOR

Raymond L. Meisenheimer, 1262 E. Kay Dr., Cherry Hill, N.J.

Filed Nov. 2, 1972, Ser. No. 303,103
Int. Cl. H02p 9/30
U.S. Cl. 322—28 **10 Claims**



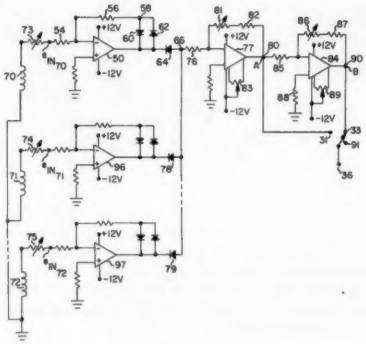
A voltage regulator is disclosed which includes circuitry therein which may be interconnected with other regulators for machines operating in parallel to provide interaction between the coupled regulators to increase the output of the lower generating machine to match the higher output machine. The regulator includes a voltage sensing network whose output controls a power transistor in series with the field excitation to inversely regulate the field excitation in accordance with the output voltage of the generator. Each regulator further includes a voltage divider network connected between the field excitations of each regulator which network is responsive to the presence of greater excitation in the other regulators to vary the voltage sensing network in the one regulator to increase field excitation to achieve load balance.

3,809,997

GENERATOR SYSTEM WITH LINEAR REVERSIBLE OUTPUT

Enrique J. Klein, 848 Boyce Ave., Palo Alto, Calif., and Myron E. Lee, Palo Alto, both of Calif., assignors to said Klein, by said Lee

Filed Apr. 9, 1973, Ser. No. 349,203
Int. Cl. H02p 1/22
U.S. Cl. 322—79 **17 Claims**



System for providing a DC signal linearly proportional through zero to the angular velocity of rotation of a shaft, and for providing a change of signal polarity with a reversal of the sense of rotation. A brushless generator having a magnetic rotor turning within a stator which includes a number of coils mounted within a magnetic return path ring. Trapezoidally shaped signals are produced by the coils when the magnetic rotor is driven. These signals are summed in one of several alternative electronic circuits, all functioning as peak detecting devices and including as elements operational amplifiers, diodes and field-effect transistors interconnected in such a way that the output will result in a smooth DC signal. The polarity of this signal is controlled by a switch operated by a friction sensitive device responsive to sense of rotation which is mounted on the generator shaft.

3,809,998

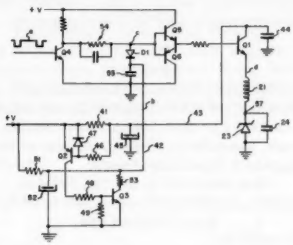
CURRENT REGULATOR FOR PULSE EDDY CURRENT TESTER

Sven E. Mansson, Hollviksnas, Sweden, assignor to Magnetic Analysis Corporation, Mt. Vernon, N.Y.

Filed Feb. 1, 1973, Ser. No. 328,889
Int. Cl. G05f 1/56
U.S. Cl. 323—4 **8 Claims**

A resistor and coil driver are connected in series between the D-C power supply and test coil of a pulse eddy current tester. A regulator responsive to the voltage across the series resistor produces a D-C control voltage varying with the average current to the test coil. Pulses from a pulse generator

and the D-C control voltage are supplied to a clipper, and the output of the clipper is supplied to the coil driver to produce



pulses in the test coil whose average current is substantially constant.

3,809,999

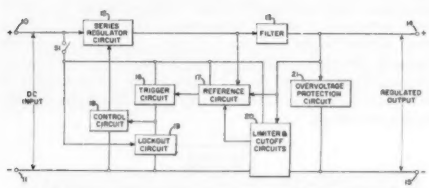
DIRECT CURRENT VOLTAGE REGULATOR

Cantrell Smith, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Apr. 19, 1973, Ser. No. 352,481

Int. Cl. G05f *1/56*

U.S. Cl. 323—17 **3 Claims**



Improved regulation of direct current voltage from an unstable voltage source through a transitor series regulator to a load is provided by a lockout circuit that prevents current flow through the series regulator when the source voltage is removed from the lockout circuit, by a current limiter circuit that controls the series regulator as a function of current supplied to a load, and by a current cutoff circuit that prevents current flow through the series regulator when the output voltage falls below a selected magnitude.

ERRATUM

For Class 324—000 see:
Patent No. 3,810,254

3,810,000

EARTH POLARIZATION METER WITH VOLTAGE CONTROL DURING CURRENT INJECTION

Arnold Aspinall, Bradford; David Gordon Spruce, Huddersfield, both of England, and John Thomas Lynam, Kambalda, Australia, assignors to National Research Development Corporation, London, England

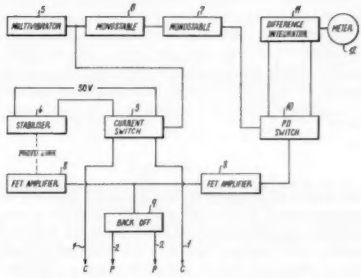
Filed Feb. 16, 1972, Ser. No. 226,885

Claims priority, application Great Britain, Mar. 9, 1971, 6346/71

Int. Cl. G01v *3/04*

U.S. Cl. 324—1 **5 Claims**

This invention concerns a meter for measuring polarisation induced in the earth and in particular for measuring transient voltages that follow the termination of direct current flow through the ground. In this device automatic normalisation of the data is achieved by correllating the voltage source producing the transient voltages with the potential measured across



measurement electrodes in such a manner that the voltage source and measurement circuits are not otherwise electrically linked.

3,810,001

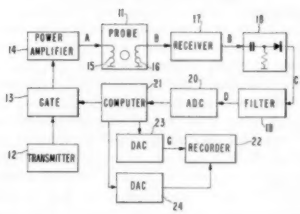
NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY EMPLOYING DIFFERENCE FREQUENCY MEASUREMENTS

Richard Robert Ernst, Winterthur, Switzerland, assignor to Varian Associates, Palo Alto, Calif.

Filed June 15, 1972, Ser. No. 263,016

Int. Cl. G01r *33/08*; G01n *27/02*

U.S. Cl. 324—.5 R **8 Claims**

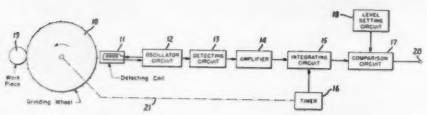


A modified impulse type Fourier transform type of nuclear magnetic resonance spectrometer wherein the direct measurement of difference frequencies between a single reference resonance line and the multiple resonance lines of the sample under analysis is provided, which provides weighting of the sample decay response by its local signal-to-noise ratio resulting in simplified system components and avoidance of stringent conditions with respect to the stability of the static unidirectional magnet field. A non-linear detector forms the desired difference frequencies and weighting function. A first embodiment employs analog-to-digital conversion and a signal averaging computer with the resultant difference frequencies of the sample response Fourier-transformed to obtain the desired spectrum. A second embodiment avoids the analog-to-digital converter and the computer, utilizing instead a form of analog Fourier analyzer to obtain the output spectrum.

3,810,002
METHOD AND MEANS FOR DETECTING THE CLOGGING OF A GRINDING WHEEL OR THE LIKE

Toshio Sata, 3-9-11 Shimohoya, Houya-shi, Tokyo, Japan

Filed Apr. 2, 1973, Ser. No. 346,814
Int. Cl. G01r 33/00
U.S. Cl. 324—34 R 8 Claims

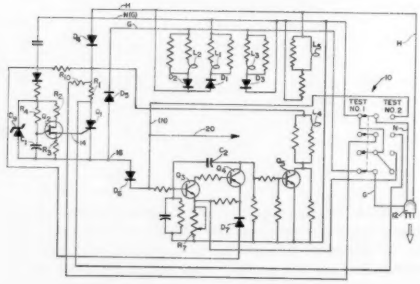


The degree of clogging or loading of the working surface of a grinding wheel or the like with the particles of electrically conductive material removed from the work is detected by a detecting coil disposed opposite the working surface of the grinding wheel and fed by a high frequency oscillator circuit so as to produce a magnetic flux such that eddy currents are induced in the conducting particles on the working surface of the grinding wheel. The counterelectromotive force due to the eddy currents causes a corresponding change in the inductance of the detecting coil, so that the frequency of the output signal from the oscillator circuit changes in accordance with the varying inductance of the detecting coil. The resulting output signal is fed through a detecting circuit, an amplifying circuit and an integrating circuit into a comparison circuit which produces an output when the level of the signal supplied from the integrating circuit becomes at least equal to a predetermined threshold.

3,810,003
DEVICE FOR DETERMINING IMPROPER REVERSAL AND/OR SHORT OF GROUND AND NEUTRAL LINES AND AMOUNT OF IMPEDANCE IN GROUND LINE OF A THREE-WIRE A.C. OUTLET

Peter G. Portoulas, Chicago, Ill., assignor to Ecos Corporation, Chicago, Ill.

Filed July 6, 1971, Ser. No. 159,806
Int. Cl. G01r 27/18, 31/02
U.S. Cl. 324—51 7 Claims

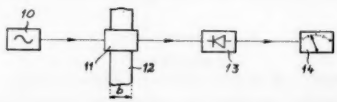


A three wire ground type AC outlet tester for testing (1) the correctness of socket wiring of three-wire receptacles, including neutral-ground reversal or shorting errors, (2) the magnitude of electrical impedance in the ground circuit, and (3) the existence of undesirable excess voltages, the tester including signal injecting means for injecting a test pulse into the ground-neutral circuit, a threshold detector responsive to a sensed magnitude value for responding to the amount of impedance in the ground circuit, and indicating means energized for indicating the presence of an amount of impedance in the ground neutral line which exceeds pre-set threshold impedance levels. The tester includes means for positively indicating an improper reversal or shorting of ground and neutral connections at the terminals of a test outlet and further includes means for providing a distinct indication of either an open ground or open neutral wiring error.

3,810,004
DEVICE FOR CONTINUOUS MEASUREMENT AND/OR MONITORING OF A DIMENSION OF AN OBJECT OF LARGE LONGITUDINAL DIMENSION

Bengt Henoch, Skarholmen, Sweden, assignor to Institutet for Mikrovagsteknik, Stockholm, Sweden

Filed July 6, 1972, Ser. No. 269,439
Claims priority, application Sweden, July 6, 1971, 8725/71
Int. Cl. G01n 27/04
U.S. Cl. 324—58.5 R 8 Claims

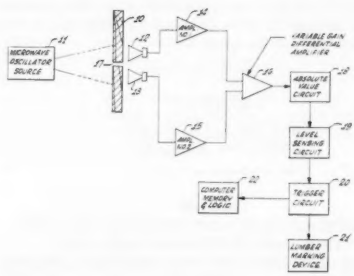


A device for the continuous measurement and/or monitoring of a dimension of an object of large longitudinal dimension. The device is of the kind which comprises a source of high-frequency electrical energy for the supply of energy of a frequency which varies periodically within a certain frequency range, a microwave circuit connected to this source of energy, which circuit in the presence of the said objects transmits frequency dependent energy within the said frequency range, and an indicator circuit for the indication of the dimension of the object as a function of the energy transmission through the microwave circuit.

3,810,005
FLAW DETECTION SYSTEM USING MICROWAVES

Don U. Bennion, and Leonard R. West, both of Salt Lake City, Utah, assignors to Industrial Development Design, Salt Lake City, Utah

Filed Mar. 26, 1973, Ser. No. 344,932
Int. Cl. G01r 27/04
U.S. Cl. 324—58.5 A 28 Claims



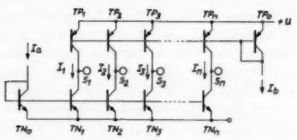
A method and apparatus for the detection of flaws in pieces of lumber or like material in which there may be wide variations in density within each piece, or among the pieces being examined. Lumber being processed is moved past two adjacent microwave detectors positioned to receive microwave radiation transmitted through the moving lumber from a conventional microwave source, and the outputs from the detectors are amplified and compared in a differential amplifier, the presence of flaws resulting in difference signals which are used

to generate pulses for controlling a lumber processing device or for storage in a memory device and use in subsequent processing steps.

3,810,006
CURRENT COMPARING DEVICE

Eric Andre Vittoz, Cernier, Switzerland, assignor to Centre Electronique Horloger S.A., Neuchatel, Switzerland

Filed June 19, 1972, Ser. No. 264,328
Claims priority, application Switzerland, June 21, 1972, 9064/72
Int. Cl. G01r *27/02*
U.S. Cl. 324—62 **11 Claims**

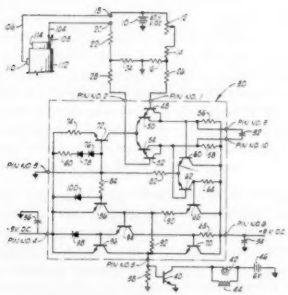


A digital output current comparing device comprises two sets of transistors of opposed types, the emitters and bases of the transistors of each set being in common. Two currents to be compared are supplied to the collectors of the first transistors of each set which each have their collector and base connected and are so dimensioned that they cannot saturate or block. The collectors of the other transistors of each set are each connected to the collector of a corresponding transistor of the other set and to a respective output, the effective injection surface areas of the base-emitter junctions of the transistors of each set being selected so that each output changes state (logic 1 or 0) for a given value of the ratio of the currents to be compared.

3,810,007
HOLIDAY DETECTOR AND COATING RESISTIVITY CHECKER

Minor R. Wiseman, and Rondon L. Schroeder, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed July 23, 1973, Ser. No. 381,792
Int. Cl. G01r *27/02*
U.S. Cl. 324—62 **13 Claims**

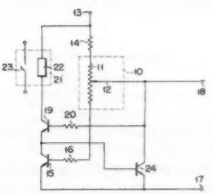


A portable, accurate, non-destructive holiday detector and resistivity coating checker employing electronic resistance bridge means for comparing the resisitivity of non-conducting coatings to a standard resistance value either in the field or in plants where such coatings are applied to metallic vessels, pipes or the like and providing respective signal outputs proportional to the coating resistivity and the standard resistance. The apparatus employs comparator means for comparing the two outputs of the resistance bridge, and an alarm responsive to the output of the comparator means for indicating the presence of a holiday in the non-conducting coating under test where the coating resistivity is less than the standard resistance value. Probe means are also disclosed for providing electrical contact with the surface of the non-conducting coatings under test. Also disclosed is a method of checking coating resistivity for the detection of holidays therein.

3,810,008
APPARATUSES FOR DETECTING FAILURE IN A POTENTIOMETER CIRCUIT

Kenro Motoda, Tokyo, and Kensuke Hasegawa, Yokohama, both of Japan, assignors to Motoda Electronics Co., Ltd., Tokyo, Japan

Filed Aug. 16, 1973, Ser. No. 388,968
Int. Cl. G01r *27/02*
U.S. Cl. 324—62 **5 Claims**



An apparatus for detecting failure in a potentiometer circuit wherein, for detection of the disconnection of the resistance body of the potentiometer, the base of a first transistor is connected to a first power supply terminal through the resistance body; for detection of the disconnection of a potentiometer slider circuit or nonconduction between the slider and resistance body, the base of a second transistor is connected to the slider; and the collector-emitter paths of the first and second transistors are connected in series between the first and second power supply terminals, so that these transistors are always rendered conducting under a normal condition of the potentiometer circuit. A failure detector, for example, a relay is connected in series to the first and second transistors to detect failure in the potentiometer circuit in response to nonconductive state of at least one of the first and second transistors which is caused by failure in the potentiometer circuit.

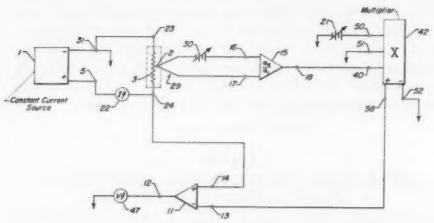
3,810,009
APPARATUS FOR MEASURING MATERIAL FOULING OF A TEST SPECIMEN

Rudolf H. Hausler, Rolling Meadows, and Robert W. Sampson, Arlington Heights, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 186,888, Oct. 6, 1971, Pat. No. 3,731,187. This application Apr. 20, 1972, Ser. No. 246,044The portion of the term of this patent subsequent to May 1, 1990, has been disclaimed.
Int. Cl. G01r *27/02*
U.S. Cl. 324—65 R **7 Claims**

An apparatus and method for measuring material buildup or fouling on a test specimen in which at least a portion of a temperature sensitive voltage output means is located proximate

to a test specimen. The extent of fouling is determined by the change in a detected current or voltage signal resulting from the change in the heat transfer coefficient of the test specimen. The temperature sensitive voltage output means is



at the same temperature as the temperature of the medium in which the test specimen resides and adjusts either a detected current or voltage signal to negate the effects of varying temperature of the medium on the detected signal.

3,810,010

PARTICLE ANALYSIS METHOD AND APPARATUS WHEREIN LIQUID CONTAINING PARTICLES IS SUCKED INTO A CONSTRICTED FLOW PATH

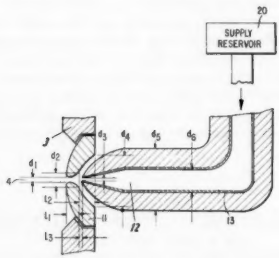
Reinhard Thom, Berlin-Dahlem, Germany, assignor to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm/Donau, Germany

Continuation of Ser. No. 872,893, Oct. 31, 1969, abandoned. This application Nov. 27, 1972, Ser. No. 309,662

Claims priority, application Germany, Nov. 2, 1968, 1806512

Int. Cl. G01n 27/06

U.S. Cl. 324—71 CP **17 Claims**



An apparatus for determining the relative quantities of different sized particles contained in a liquid, for example the relative number of red and white blood corpuscles, by measuring the electrical changes which occur as said particles pass through a capillary passage, is improved by providing a second capillary passage which directs the fluid medium containing the particles to be tested into the center of the first capillary passage.

3,810,011

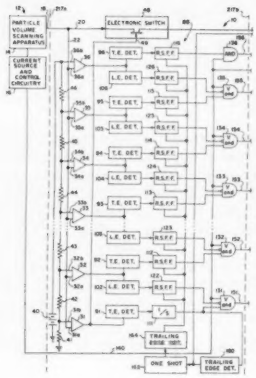
APPARATUS AND METHOD FOR ANALYZING THE PARTICLE VOLUME DISTRIBUTION FOR A PLURALITY OF PARTICLES OF DIFFERENT SIZE IN A QUANTITY OF LIQUID

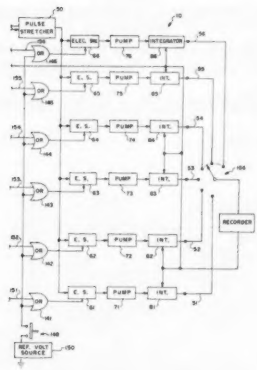
Wallace H. Coulter, Miami Springs, and Walter R. Hogg, Miami Lakes, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Continuation-in-part of Ser. No. 40,231, May 25, 1970, Pat. No. 3,757,213. This application Apr. 18, 1973, Ser. No. 352,361

Int. Cl. G01n 27/00

U.S. Cl. 324—71 CP **18 Claims**





The apparatus and method are utilized for ascertaining the volume of particles within predetermined particle-size ranges from a total amount of particulate matter comprising particles of different size, suspended in a quantity of liquid. The apparatus and method utilize the output signals from a particle analyzing device where the quantity of liquid containing particles of different size is caused to flow through a sensing zone including an electric current path of small dimensions and where each particle sensed generates an electrical signal having an amplitude proportional to the size of the particle sensed. The electrical signal is applied simultaneously to a plurality of comparators and to a pulse stretcher which stores the maximum amplitude of the signal. Each of the comparators is connected to a different threshold level and the output of each

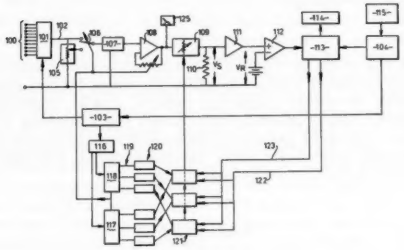
comparator is connected to logic signal generating circuitry including trailing edge and leading edge detectors, multivibrators and VETO AND circuits. The output of the pulse stretcher is connected to a plurality of output channels and the output of each VETO AND circuit is connected to an electronic switch in one of the output channels. The logic signal generating circuitry determines within which size range the particle falls and sends a logic signal from one of the AND circuits to one of the electronic switches to close the circuit in that output channel so that the signal from the pulse stretcher can be passed into the output channel. Signal converting circuitry is associated with the output channels for converting the stored maximum amplitude signal in the pulse stretcher to an electrical quantity capable of being accumulated in one of the integrators in one of the output channels. An electrical quantity is produced for each electrical signal generated by each particle sensed and is stored in an integrator in one of the output channels which is determined by the size of the particle. The output signal in each output channel is proportional to the total accumulated electrical quantities in that output channel and hence also proportional to the total volume of particles falling within a particular particle size range.

3,810,012

APPARATUS FOR AUTOMATICALLY EVALUATING THE VOLTAGE AT A NUMBER OF TEST POINTS SEQUENTIALLY

Edward Paul Harris, Bognor Regis, England, assignor to Rosemount Engineering Company Limited, Bognor Regis, England

Filed Oct. 17, 1972, Ser. No. 298,239
Int. Cl. G01r *15/12*
U.S. Cl. 324—73 R **8 Claims**



Automatic test equipment primarily for printed circuit boards in which each test point is connected sequentially via a scanner and isolating amplifier across a single set of series connected resistors, the resistors in the set being adjusted for each test point in synchronism with the scanner and to a programme to a value for each point such that when a preassigned input potential is present for a test point a standard voltage is produced across a precision resistor included in the set of resistors, the voltage being compared with a standard voltage source and the result of the comparison indicating the deviation of the test point voltage from that assigned.

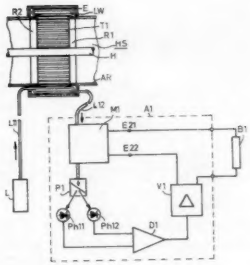
3,810,013

ELECTRO-OPTICAL DEVICE FOR MEASURING THE VOLTAGE ON A HIGH-VOLTAGE CONDUCTOR

Willi Muller, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munchen, Germany

Filed June 5, 1972, Ser. No. 259,613
Claims priority, application Germany, June 11, 1971, 2130046
Int. Cl. G01r *19/00, 31/02*
U.S. Cl. 324—96 **14 Claims**

A measuring device for measuring voltages of high voltage conductors wherein a measuring detector composed of a light wave conductor which is disposed in an electric field produced by said voltage and is penetrated by polarized light so that the polarization plane of the light waves is rotated in proportion to the magnitude of the voltage to be measured



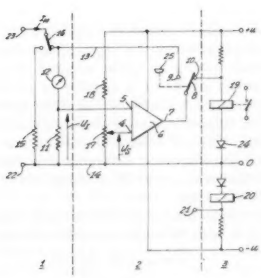
and an evaluation device is provided which converts the rotation of the plane of the polarized light into a low voltage electrical quantity proportional to the magnitude of the high voltage being measured.

3,810,014

MEASURING INSTRUMENT

Heinz-Dieter Goldner, Schwalbach, Germany, assignor to Hartmann & Braun Aktiengesellschaft, Frankfurt/Main, Germany

Filed Nov. 20, 1972, Ser. No. 308,110
Claims priority, application Germany, Nov. 30, 1971, 2159284
Int. Cl. G01r *1/30, 1/02*
U.S. Cl. 324—130 **3 Claims**

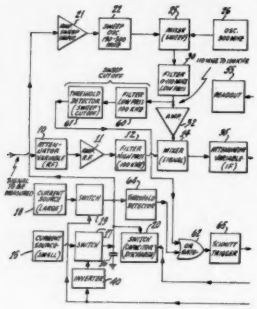


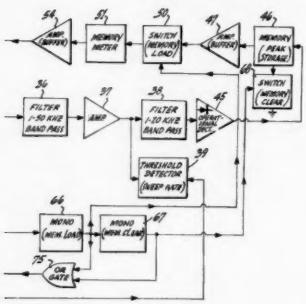
A variable is monitored and indicated by a measuring instrument incorporated in a circuit that uses the instrument for setting and adjustment of the reference input to be used later as trigger level. The reference is supplied to the first input of a differential amplifier while the variable is supplied to the second input of the amplifier. The output of the amplifier is connected with a reversing switch which in its one switching position couples the output to a tripping or triggering stage, possibly including a relay, and in the other one of its switching positions the output is coupled to the second input of the amplifier, so that the instrument actually indicates the reference value rather than the variable.

3,810,015
SENSITIVE WIDE BAND VOLTMETERS

Philip Basse, Freeport, N.Y., assignor to Comstron Corporation, Richmond Hill, N.Y.

Filed Apr. 12, 1972, Ser. No. 243,224
Int. Cl. G01r *19/26, 15/08*
U.S. Cl. 324—120 **8 Claims**





There is described a sensitive wide band voltmeter for measuring the amplitude of an AC signal. The voltmeter includes a mixing circuit having an input adapted to receive an AC signal. A sweep oscillator is capable of operating in a first mode for providing a relatively fast slope waveform and in a second mode responsive to the output of the mixer producing a frequency within a relatively narrow band. During the second mode the frequency difference signal from the mixer is detected and stored to provide an indication of the magnitude of the input AC signal.

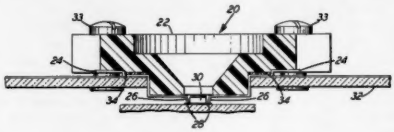
A memory is utilized to provide a stable output indication. The memory is updated at the conclusion of each sweep cycle.

3,810,016
TEST PROBE FOR SEMICONDUCTOR DEVICES

George A. Chayka, Northampton; Eric J. Persson, Bethlehem, and Norbert M. Ziobro, Dupont, all of Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 17, 1971, Ser. No. 209,243
Int. Cl. G01r *31/02, 31/22*
U.S. Cl. 324—158 P **5 Claims**

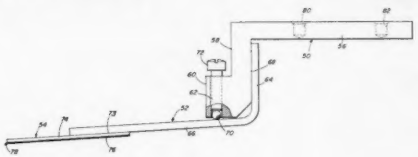
An intricate micro-probe for testing beam-lead semiconductor devices such as integrated circuits is formed from a molded insulator, a die-cut compensating member and photo-etched contact elements. The configuration of the various elements of the probe is such that mechanized fabrication and assembly of the small probe are possible. The contact elements are photo-etched from a blank which also yields a connected frame having a unique expansion feature permitting three-dimensional shaping of the elements without stretching the elements. The contact elements are thermally embedded into the plastic insulator. A shaping of the contact elements is accomplished with a pyramidal shaping tool and a cut-off blade which trims the contact elements against the pyramidal shaping tool.



3,810,017
PRECISION PROBE FOR TESTING MICRO-ELECTRONIC UNITS

Mordechai Wiesler, Lexington, and John S. MacIntyre, Lynnfield, both of Mass., assignors to Teledyne, Inc., Hawthorne, Calif.

Filed May 15, 1972, Ser. No. 253,327
Int. Cl. G01r *31/02*
U.S. Cl. 324—158 P **12 Claims**



A test probe, for electronically contacting microelectronic units, comprises a rigid rearwardly projecting portion and a flexible forwardly projecting portion, fixedly connected together, and an adjusting screw turned into a threaded bore in the rearwardly projecting portion and bearing against the forwardly projecting portion, whereby extremely fine adjustment of the probe tip is possible.

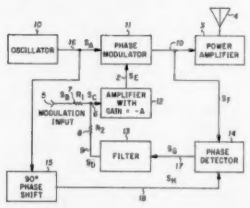
ERRATUM

For Class 325—30 see:
Patent No. 3,810,255

3,810,018
DISTORTION COMPENSATOR FOR PHASE MODULATION SYSTEMS

Harris A. Stover, Cedar Rapids, Iowa, assignor to Collins Radio Company, Dallas, Tex.

Filed June 13, 1972, Ser. No. 262,433
Int. Cl. H04b *1/00*
U.S. Cl. 325—30 **8 Claims**



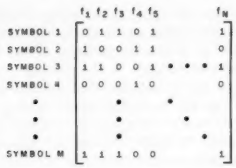
A distortion compensation means for introduction in either the transmitter or the receiver of a phase modulation commu-

nication system by introduction into conventional transmitter phase modulators or receiver phase demodulators of a compensating distortion which is added to the distortion normally existing in the system.

3,810,019
MULTIFREQUENCY COMMUNICATION SYSTEM FOR FADING CHANNELS

Chauncey S. Miller, Palos Verdes Peninsula, Calif., assignor to Sperry Rand Corporation, Great Neck, N.Y.

Filed Sept. 25, 1972, Ser. No. 291,880
Int. Cl. H04l *5/06*
U.S. Cl. 325—40 **7 Claims**



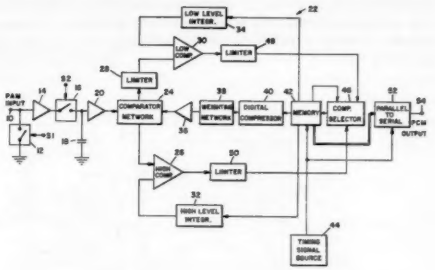
A communication system particularly for underwater communication includes a transmitter and a receiver. An oscillator in the transmitter generates a plurality of signals each having a unique frequency. A network selects predetermined combinations of signals from this plurality, each selected combination defining a data symbol to be transmitted. The assignment of the frequency groups with respect to the data symbols to be transmitted is achieved via a Hadamard matrix. During each data symbol transmission interval a gate selects the combination of frequency signals corresponding to the symbol to be transmitted. The signals in the combination are added and transmitted by a transducer. The receiver includes a bank of filters each tuned to one of the plurality of frequency signals generated in the oscillator bank. The outputs of the filters are envelope detected and applied to a frequency code selector. In each data symbol transmission interval, the frequency code selector combines the detected outputs from the filter bank in accordance with the Hadamard transformation matrix to provide a plurality of groups of signals each corresponding to a symbol in the system symbol repertoire. Each group of signals are summed and the resulting signals applied to a decision circuit that selects the maximum therefrom. The output of the decision circuit which is representative of the transmitted symbol is applied to a suitable readout.

3,810,020
ENCODER-DECODER FOR PCM SYSTEMS

Achille C. Fortuna, Foster City, and Hans-Uno Persson, San Francisco, both of Calif., assignors to Lynch Communication Systems, Inc., San Francisco, Calif.

Filed June 5, 1972, Ser. No. 259,940
Int. Cl. G01r *7/00*
U.S. Cl. 325—141 **4 Claims**

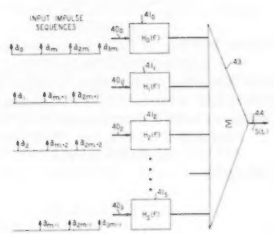
High accuracy at low signal amplitudes is achieved in the encoder section of an encoder-decoder for PCM signals together with low cost by using a feedback linear encoder with a digital compandor, dividing the companding scale into two ranges having an equal number of segments, providing a separate comparator for each range, and using the same set of weights for both comparators. A shift weight is provided to go from the low-level comparison to the high-level comparison, and a ratio-producing network is provided to multiply the effect of each weight by the appropriate expansion factor in the high-level comparator as compared to the low-level comparator.



3,810,021
INBAND GENERATION OF DIGITAL SIGNALING WAVEFORMS

Irving Kalet, Haifa, Israel, and Stephen Brant Weinstein, Holmdel, N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed June 16, 1972, Ser. No. 263,642
Int. Cl. H04b *1/04*
U.S. Cl. 325—141 **6 Claims**



Analog waveforms are directly and continuously generated in a desired transmission passband from baseband digital data signals without a separate frequency translation operation by exciting bandpass filters from a train of data pulses. Conventionally, direct inband signal generation is restricted to cases where the passband carrier frequency, whether explicit or implicit, e.g., the carrier frequency in a single-sideband modulation system, is an integral multiple of the data rate. This constraint can be liberalized to permit the ratio of carrier frequency to data rate to be a rational fraction when a finite number of fixed filters with selected phase characteristics are cyclically pulsed. Such fixed filters can advantageously take the form of a single transversal filter with cyclically adjustable tap weights.

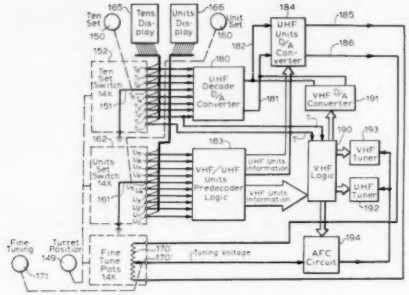
3,810,022
DIGITAL TO ANALOG CONVERTER TELEVISION TUNING OF VARACTOR TUNERS

Johnny Collins, Harvey, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed July 21, 1972, Ser. No. 273,891
Int. Cl. H04b *1/16*
U.S. Cl. 325—459 **3 Claims**

A digital to analog converter effects limited and substantially equal fine tuning ranges for all channels tuned by a

television tuning system incorporating a varactor tuner tunable by tuning voltages applied to a control element. The digital to analog converter derives from coarse tuning voltages established in response to channel decade slection fine tuning voltages in response to channel unit selections. It comprises a voltage dividing network, including the control element, coupled to the coarse tuning voltages and to means responsive to unit selections providing a control effect, to restrict the tuning ranges of the coarse tuning voltages in response to the control effect. The digital to analog converter also provides means for applying the fine tuning voltages to the control element.



3,810,023

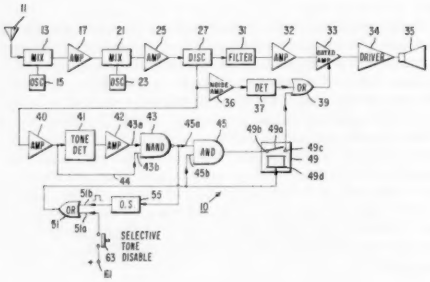
AUTOMATIC SQUELCH TAIL ELIMINATOR FOR TONE CODED SQUELCH SYSTEMS

Lee Francis Crowley, Pittsburgh; Dennis Robert Presky, Washington, and Andrew Michael Missenda, Pittsburgh, all of Pa., assignors to RCA Corporation, New York, N.Y.

Filed July 21, 1972, Ser. No. 273,754

Int. Cl. H04b 1/10

U.S. Cl. 325—478 **8 Claims**



A squelch tail eliminator for use in a receiver having a continuous tone coded squelch system and provision for the disabling of the tone coded squelch system is disclosed. A pulse generator, responsive to the discontinuance of a given tone, generates a gating pulse that inhibits the disabling of the tone coded squelch system for the time duration of that pulse, providing squelch tail elimination at the end of a message transmission indicated by the discontinuance of the tone.

3,810,024

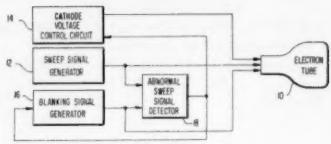
METHOD AND CIRCUIT FOR MONITORING AND DETECTING SWEEP SIGNAL FAILURE

James H. Meacham, Laurel, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 20, 1972, Ser. No. 308,090

Int. Cl. H02h 7/00

U.S. Cl. 328—8 **18 Claims**



A method and sweep signal monitoring circuit for protecting scanned electron tubes, particularly high sensitivity imaging devices such as television camera tubes, from damage upon loss of a sweep voltage. A monitoring circuit monitors the sweep voltage and generates, through the use of complementary gating signals, a digital signal having a first signal level for a normal sweep voltage and a second signal level for an abnormal sweep voltage. The second signal level of the digital signal not only indicates loss of the sweep voltage but also indicates undesirable changes in the zero crossing point of the sweep voltage. The signal level of the digital signal is monitored and the detection of the second signal level may result in the inhibiting of the scanning of the tube or in any other suitable protective measures.

ERRATUM

For Class 328—164 see:
Patent No. 3,810,067

3,810,025

FIELD EMISSION TYPE ELECTRON GUN

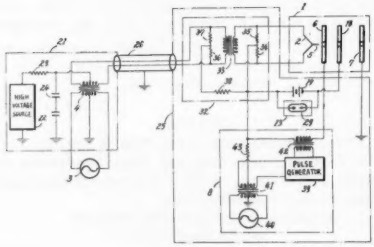
Ryuzo Aihara; Susumu Ota, and Nobuyuki Kobayashi, all of Tokyo, Japan, assignors to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1972, Ser. No. 245,232

Claims priority, application Japan, Apr. 20, 1971, 46-30876; May 11, 1971, 46-31405; Sept. 7, 1971, 46-69070

Int. Cl. H02h 7/20

U.S. Cl. 328—10 **2 Claims**



This invention relates to a field emission type electron gun capable of protecting the emitter tip from damage when electrical breakdown occurs in the gun chamber. The preferred embodiments incorporate circuitry for decreasing the impedance between the emitter and its associated electrode when electrical breakdown occurs.

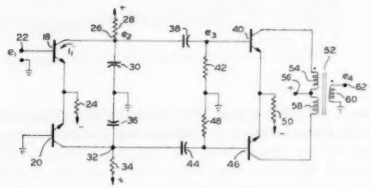
3,810,026
DUTY FACTOR CORRECTION CIRCUIT

Stephen A. Roth, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation of Ser. Nos. 194,064, Oct. 29, 1971, abandoned, and Ser. No. 809,140, March 21, 1969, abandoned. This application May 29, 1973, Ser. No. 364,228

Int. Cl. H03k 17/00

U.S. Cl. 328—127 15 Claims



A limiter circuit receives a distorted or unsymmetrical input signal, and in response thereto produces a rectangular current waveform. The rectangular current waveform is applied to an integrating means for generating a triangular waveform, the average value of which divides such triangular waveform into equal time intervals. This triangular waveform is a.c. coupled to a second limiter circuit which provides an output waveform characterized by a fifty percent duty factor.

3,810,027
SIGNAL PROCESSING METHOD AND APPARATUS

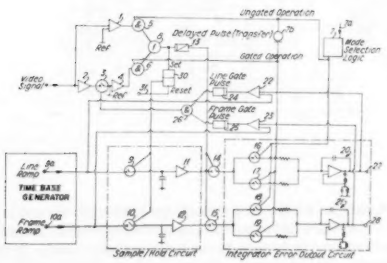
Ronald Cook, Shefford; John Reginald Guppy, Hitchin, and John D. Howells, Harpenden, all of England, assignors to British Aircraft Corporation Limited, London, England

Filed Jan. 26, 1973, Ser. No. 327,199

Claims priority, application Great Britain, Jan. 31, 1972, 4495/72

Int. Cl. H03k 5/153

U.S. Cl. 328—129 6 Claims



In signal-receiving apparatus of the kind having a time-base generator there are alternative ungated and gated input circuits. The receipt of a signal of a level above a predetermined threshold causes the time-base signal levels, at the instant of receipt, to be stored. These stored time-base signals are compared with instantaneous values of time-base signals in a subsequent time-base cycle and identity between the compared signals is caused to switch the gate in the gated input circuit to its signal-passing condition.

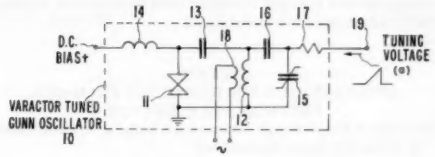
3,810,028
WAVESHAPING CIRCUIT AND DEVICES USING SAME

Curtis E. Ward, Los Altos, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Oct. 10, 1972, Ser. No. 296,384

Int. Cl. H03k 17/00

U.S. Cl. 328—142 9 Claims



A waveshaping circuit for producing a non-linear transfer function includes an amplifier having a non-linear negative feedback device, such as a diode, connected for causing the gain of the amplifier to increase with increasing amplitude of the input signal such that the transfer function for the waveshaping circuit is an exponential function where the exponent has a magnitude greater than 1. The output of the non-linear amplifier is fed to the input of a device which it is desired to linearize and which has an exponential transfer function where the exponent is less than 1 such that the combined transfer function for the combined wavehsaping circuit and the device to be linearized has a linear transfer function. The non-linearity of the waveshaping circuit is adjustable ty varying the amount of negative feedback. The circuit is temperature compensated by means of a thermistor having a temperature coefficient matched to that of the diode and paralleled with the diode in a differential amplifier circuit.

3,810,029
SYSTEM FOR DETECTING WEAK INFORMATION SIGNALS IN NOISY RECEIVER SIGNALS

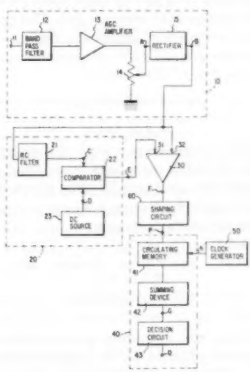
Robert Lucien Barthelemy, Toulon, France, assignor to Etat Francais, Paris, France

Filed May 18, 1973, Ser. No. 361,558

Claims priority, application France, May 18, 1972, 72.17849

Int. Cl. H04b 1/10

U.S. Cl. 328—167 15 Claims



A system is provided which permits the detection of a useful signal in a received signal having a low signal to noise ratio. The system includes a band pass filter connected to receive the signal to be processed, an AGC amplifier, and a compara-

tor which compares the output of the amplifier with a threshold or reference level and produces an output during the time this level is exceeded. The output of the comparator is converted into a train of rectangular pulses which are sampled at a clock frequency which is substantially shorter than the minimum duration of the useful signal. A circulating memory receives the samples which are arithmetically summed at each clock time, the arithmetical sum being then compared with a second threshold level to determine whether the received signal is a useful signal.

3,810,030

APPARATUS FOR FOCUSSING THE BEAM OF A PARTICLE ACCELERATOR

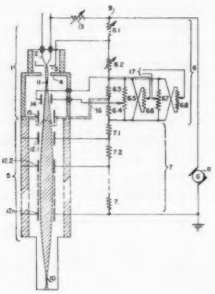
Hermann Adler, Reinach, Switzerland, assignor to Emil Haefely & Cie AG, Basle, Switzerland

Filed May 20, 1971, Ser. No. 145,460

Claims priority, application Switzerland, May 21, 1970, 7528/70

Int. Cl. H01j *29/74*

U.S. Cl. 328—228 **1 Claim**



Apparatus for focussing the beam of a particle accelerator. A resistive chain is connected across the high voltage source for the accelerator. This chain includes, inter alia, a potentiometer chain for supplying varying potentials to the accelerating electrodes on a pair of fixed resistors for supplying potential to the anode of the electron gun. The beam injection system includes two pairs of deflection plates which receive potential from two ganged pairs of potentiometers wired in parallel across the pair of fixed resistors.

3,810,031

INTEGRATED AMPLIFYING DEVICE HAVING LOW DRIFT AND METHOD OF COMPENSATING FOR THE DRIFT OF AN AMPLIFYING DEVICE

Robert Poujois, Grenoble, France, assignor to Commissariat A L'Energie Atomique, Paris, France

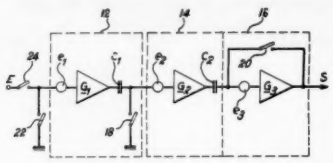
Filed May 16, 1972, Ser. No. 253,771

Claims priority, application France, May 19, 1971, 71.18265

Int. Cl. H03f *1/02*

U.S. Cl. 330—9 **8 Claims**

The device comprises *n* amplifying stages placed in cascade and each comprising means for storing a value substantially proportional to the offset voltage of each stage and compensating for the offset voltage, and means for periodic control of the storage and compensation means. Storage and compensation operations are carried out on the one hand successively stage by stage in order that one stage should compensate for the imperfections of storage of the preceding stage and, on the other hand, for a period of very short duration compared with the time interval which elapses between two successive operations. The input of the first stage constituting the input of the



device is provided with at least one switch for connecting said input to ground during the storage and compensation operation.

ERRATUM

For Class 330—28 see:
Patent No. 3,810,256

3,810,032

AMPLIFIER DEVICE WITH REMOTE POWER SUPPLY

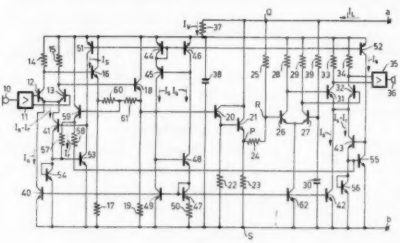
Petrie Johan Van der Plaats, Hilversum, Netherlands, assignor to U. S. Philips Corporation, New York, N.Y.

Filed Nov. 7, 1972, Ser. No. 304,390

Claims priority, application Netherlands, Nov. 19, 1971, 7115947

Int. Cl. H03g *3/30*

U.S. Cl. 330—29 **5 Claims**

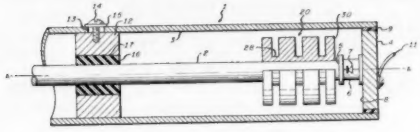


Am amplifier device with remote power supply via a transmission line via which an alternating current signal is transmitted simultaneously with the supply current (from or to the amplifier device). A damping control unit damps the alternating current signal such that the damping differences between long and short transmission lines are equalized. To this end the amplifier device comprises a reference current source, the current of which is independent of variations in the supply voltage. Furthermore, means are provided for generating a control current which is equal to the difference between a constant current which is derived from the current source and a current which is linearly dependent of the supply current. This control current controls a controlled amplifier, the amplification of which is a monotonously decreasing function of the supply current.

3,810,033
BROAD BAND HIGH EFFICIENCY AMPLIFIER WITH IMPROVED BAND WIDTH

Martin I. Grace, Framingham, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed May 17, 1972, Ser. No. 254,147
Int. Cl. H03f *3/60*
U.S. Cl. 330—53 **3 Claims**

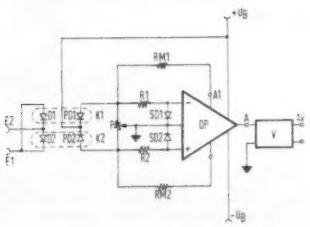


An active high-efficiency-mode semiconductor diode is coupled to oscillating high frequency fields in a transmission line network for amplifying those electromagnetic fields, the apparatus taking the form of a single port high frequency device. The selected diode and the transmission line network provide means for elimination of time delayed triggering of undesired oscillations within the amplifier. Further, operating band width is increased by selection of a diode package that is anti-resonant at the second harmonic of the fundamental frequency signal being amplified, the diode itself reflecting small-signal negative resistance characteristics at that harmonic.

3,810,034
OPTOELECTRIC SIGNAL COUPLER

Gunter Brunsch, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Aug. 29, 1972, Ser. No. 284,463
Claims priority, application Germany, Sept. 1, 1971, 2143792
Int. Cl. H03f *17/00*
U.S. Cl. 330—59 **3 Claims**

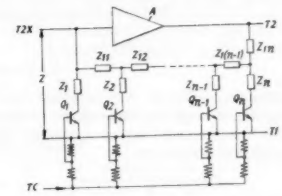


Apparatus is described for transmitting d.c. signals from an input circuit to an output circuit electrically isolated from the input circuit. Optoelectric coupling is used to achieve the isolation. Photodiodes form the output of the optoelectric couplers, and the photodiodes are connected in series, if more than one coupler is used, and are reverse-biased. Each photodiode has an output terminal connected to an input of an operational amplifier. The input terminals of the amplifier are connected across the fixed ends of a potentiometer, and the variable tap is grounded in common with the ground connection of the amplifier. Positive feedback resistances couple the amplifier outputs to its inputs, and these resistances have values such that the output voltage of the amplifier assumes a value corresponding to the input signal received by the optoelectric couplers.

3,810,035
CONTROLLED RESISTANCE DEVICES AND ATTENUATORS

Kenneth James Gundry, London, England, assignor to Dolby Laboratories, Inc., New York, N.Y.

Filed Sept. 28, 1972, Ser. No. 292,922
Claims priority, application Great Britain, Oct. 4, 1971, 46121/71
Int. Cl. H02g *3/22*
U.S. Cl. 330—86 **5 Claims**

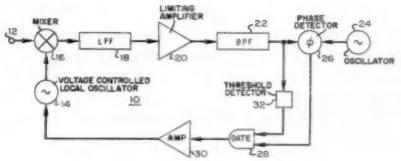


A controlled impedance device such as an attenuator is formed by parallel connected bipolar transistors and a network so applying a control signal to their bases that, as the control signal increases, the transistors commence to conduct progressively. A bootstrapped variable attenuator is formed by a variable attenuator connected in series with an impedance between the output and input of a high input impedance amplifier.

3,810,036
PHASE LOCK LOOP FOR LOCKING ON HIGHEST AMPLITUDE SIGNAL

Arthur R. Bloedorn, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 5, 1972, Ser. No. 295,387
Int. Cl. H03b *3/04*
U.S. Cl. 331—15 **5 Claims**



A broadband, limiting amplifier is used in the IF portion of a harmonic phase lock loop, preceding the IF bandpass filter. The limiting amplifier gives an output signal of a predetermined magnitude having a frequency corresponding to the input signal having the highest level, and a detector connected to the output of the IF bandpass filter inhibits the phase lock loop whenever the signal passing through the bandpass filter is below the predetermined magnitude.

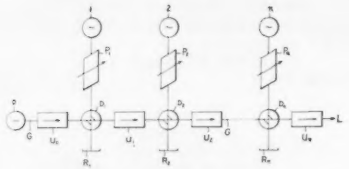
3,810,037
TRAVELING-WAVE TYPE POWER ADDITION CIRCUIT

Masamitsu Nakajima, Kyoto, Japan, assignor to Kyoto University, Kyoto, Japan

Filed June 15, 1972, Ser. No. 263,240
Claims priority, application Japan, Sept. 13, 1971, 46-071003
Int. Cl. H03b *3/06*
U.S. Cl. 331—55 **5 Claims**

A traveling-wave type power addition circuit has an original oscillator and a separate directional coupler, reflector and

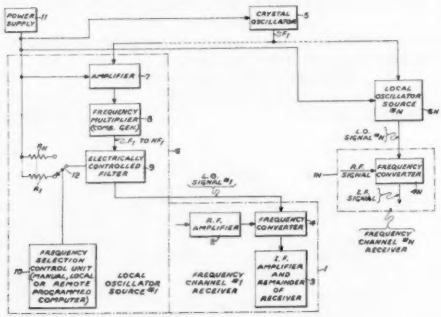
phase shifter associated with each additional oscillator such that a wave provided by the original oscillator is supplied to a subsequent directional coupler and a part of the wave is supplied to a subsequent reflector. Any reflected wave from the reflector is injected through the phase shifter to the additional oscillator. The synchronized output is passed through the directional coupler to a main line.



3,810,038
SYSTEM FOR DERIVING FROM A SINGLE STABLE OSCILLATOR A PLURALITY OF DIFFERENT SELECTABLE LOCAL OSCILLATOR SIGNAL

David E. Hershberg, Ridgewood; Arthur H. Chaplin, Wayne, and Joseph F. Dewland, Secaucus, all of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Nov. 14, 1972, Ser. No. 306,469
Int. Cl. H03b *19/00*
U.S. Cl. 331—60 **8 Claims**

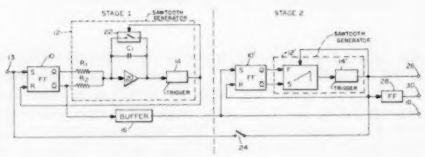


An arrangement is disclosed to provide a different local oscillator signal for each of N receivers contained in a communication station, where N is equal to an integer greater than one. Each of the receivers receive a different one of N communication frequency channels with adjacent ones of the N frequency channels being spaced from each other by a given frequency value. One embodiment incorporates a highly stable oscillator generating a signal having a frequency equal to the given frequency value. The oscillator output signal is then amplified to a high level and distributed to N multiplier/electrically controlled filter units. A different local oscillator signal is then selected for each of the receivers by an associated one of the electrically controlled filters. A second embodiment is identical to the first embodiment through the output of the N multipliers. In the second embodiment there is provided N units, each of which is coupled to a different one of the N multipliers. Each of these N units include N filters, each tuned to a different one of the required local oscillator signals, and N electrically controlled semiconductor switches. A different local oscillator signal is then selected for each of the receivers by a filter and a semiconductor switch of an associated one of the N units. A third embodiment includes the oscillator of the first and second embodiment, a multiplier coupled to the oscillator and one group of N filters of the second embodiment. The outputs of the N filters in this embodiment is fed to a semiconductor NxN matrix. The matrix is controlled to route each of the different local oscillator signals to a different associated one of the N receivers.

3,810,039
METHODS AND APPARATUS FOR GENERATING RANDOM TIME INTERVALS

Harry Fein, Indian Cove Rd., Guilford, Conn.

Filed Feb. 26, 1973, Ser. No. 335,951
Int. Cl. H03k *3/82*
U.S. Cl. 331—78 **11 Claims**

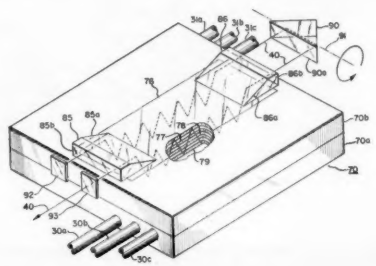


The generation of pulses commensurate with random time intervals is achieved by generating a periodic signal at a first frequency and, upon occurrence of an initiating event, translating the signal to a different time base by changing the time constant of the signal generator. The time between the start of each cycle of the first frequency signal and the obtaining of a predetermining magnitude of the signal after translation to the different time base will be commensurate with random time intervals.

3,810,040
MULTI-COLOR FACE-PUMPED LIQUID LASER DEVICE

William S. Martin, Schenectady, and Donald R. White, Rexford, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed June 14, 1971, Ser. No. 152,582
Int. Cl. H01s *3/05, 3/09, 3/02*
U.S. Cl. 331—94.5 **7 Claims**



A plurality of flowing (or nonflowing) sheets of active liquid laser media, generally having different color emissions, are each optically excited along at least one of its major surfaces to produce a plurality of coherent electromagnetic radiations each characteristic of the liquid medium employed. In one embodiment, single sheets of a plurality of the liquid laser media are produced in superposed orientation in a liquid-tight chamber, and a multi-color colinear beam of coherent electromagnetic radiation having the combined radiation characteristics of the plurality of liquid laser media, longitudinally transverses the superposed liquid laser media sheets in an off-axial direction to effect multiple total internal reflections of the beam and cause each ray thereof to pass through substan-

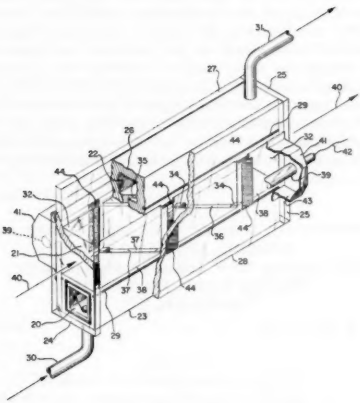
tially identical thermal environments thereby substantially reducing distortion of the beam wavefront. In another embodiment, spaced refracting prisms are positioned in a liquid-tight chamber and a plurality of separate zig-zag patterns of the laser liquid sheets are formed in the spacings between adjacent prisms to produce a like plurality of spatially separate laser beams. The pumping radiation is incident on the refracting prisms and is refracted and reflected through the prisms to produce substantially uniform pumping along the major surfaces of the sheets of liquid laser media. The pumping means is laterally positioned with respect to the laser beam axes which coincide with the longitudinal axes of the zig-zag patterns. In this case also, each ray of a beam of coherent electromagnetic radiation experiences the same temperature distribution as it passes through a sheet of liquid laser medium, thereby substantially reducing distortion of the beam waveform.

3,810,041

FACE-PUMPED LIQUID LASER DEVICE

William S. Martin, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed June 14, 1971, Ser. No. 152,701
Int. Cl. H01s *3/05, 3/09, 3/02*
U.S. Cl. 331—94.5 **6 Claims**



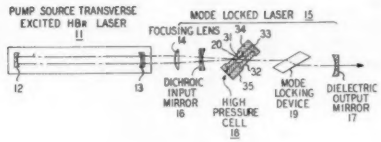
A flowing (or nonflowing) sheet of active liquid laser medium is optically excited along at least one of its major surfaces to produce a coherent electromagnetic radiation characteristic of the liquid medium employed. In one embodiment, a single sheet of the liquid laser medium is produced in a liquid-tight chamber. The coherent electromagnetic radiation longitudinally traverses the liquid laser medium sheet in an off-axial direction to effect multiple total internal reflections of the beam and cause each ray thereof to pass through substantially identical thermal environments thereby substantially reducing distortion of the beam wavefront. In another embodiment, a plurality of spaced refracting prisms are positioned in a liquid-tight chamber and a zig-zag pattern of the laser liquid sheets is formed in the spacings between adjacent prisms. The pumping radiation is incident on the refracting prisms and is refracted and reflected through the prisms to produce substantially uniform pumping along the major surfaces of the sheets of liquid laser medium. The pumping means is laterally positioned with respect to the laser beam axis which coincides with the longitudinal axis of the zig-zag pattern. In this case also, each ray of the beam of coherent electromagnetic radiation experiences the same temperature distribution as it passes through the sheet of liquid laser medium, thereby substantially reducing distortion of the beam wavefront.

3,810,042

TUNABLE INFRARED MOLECULAR LASERS OPTICALLY PUMPED BY A HYDROGEN-BROMIDE LASER

Tao-Yuan Chang, Middletown, and Obert Reeves Wood, II, Matawan, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed May 8, 1972, Ser. No. 250,976
Int. Cl. H01s *3/09, 3/22*
U.S. Cl. 331—94.5 **6 Claims**



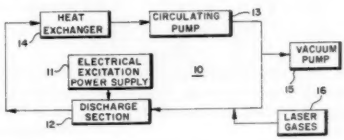
There are disclosed laser configurations in which a high pressure molecular medium such as compressed CO_2, liquid CO_2 or solid CO_2 is pumped by a hydrogen-bromide molecular laser. The hydrogen-bromide laser, when transversely excited, can provide high pump powers between 4.0 and 4.6 micrometers wavelength. This wavelength range is desirable for pumping molecules having a linear three-atomic skeletal, including those molecules which are simple linear three-atomic molecules. An example of a more complicated molecule having a linear three-atomic skeletal is CH_2CO. The active medium has a spectrum of vibrational-rotational emission lines that merge into a continuum that is suitable for mode-locked pulsing or tunable operation.

3,810,043

METHOD OF OPERATING CLOSED-CYCLE CARBON DIOXIDE LASERS IN WHICH CARBON MONOXIDE IS USED TO PREVENT DEGRADATION OF PERFORMANCE

Edward V. Locke, Rockport, Mass., and Edward T. Gerry, MacLean, Va., assignors to Avco Corporation, Cincinnati, Ohio

Filed Nov. 15, 1972, Ser. No. 306,896
Int. Cl. H01s *3/22*
U.S. Cl. 331—94.5 **9 Claims**

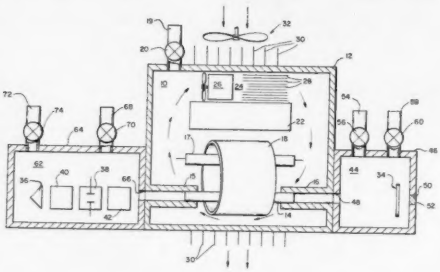


A method of operating closed-cycle carbon dioxide flowing gas lasers in which a gaseous mixture typically comprising carbon dioxide, nitrogen and helium is electrically excited to produce lasing action, wherein carbon monoxide is included in the gaseous mixture in amounts sufficient to substantially prevent degradation of performance relative to open-cycle performance.

3,810,044
METHODS FOR PROTECTING LASER OPTICAL ELEMENTS FROM SURFACE DAMAGE

Eric J. Woodbury, Tarzana, and Donald R. Dewhirst, Torrance, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 22, 1973, Ser. No. 334,550
Int. Cl. H01s 3/02
U.S. Cl. 331—94.5 T **7 Claims**

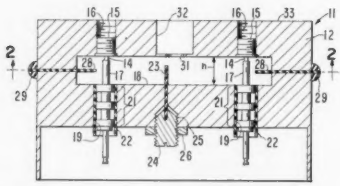


Optical components of a Q-switched laser which are housed within a hermetically sealed chamber and exposed to laser radiation during operation of the laser may be protected from surface damage due to the laser radiation by purging the chamber with a gas containing at least about 50 micrograms of oxygen for each square centimeter of the total surface area exposed to the gas within the chamber prior to operating the laser, and then hermetically sealing the chamber to maintain the aforementioned gas therein at a partial pressure of oxygen not exceeding about one atmosphere during operation of the laser. Protection of optical surfaces within a hermetically sealed laser pumping chamber while cooling the chamber may be achieved by circulating in the laser pumping chamber a pressurized coolant gas consisting of about 99 percent nitrogen and about 1 percent oxygen at a total pressure of about 20 atmospheres.

3,810,045
PUSH-PULL TRANSFERRED-ELECTRON DEVICE CIRCUIT

Thomas G. Ruttan, Mountain View, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Nov. 3, 1972, Ser. No. 303,577
Int. Cl. H03b 7/14
U.S. Cl. 331—96 **9 Claims**

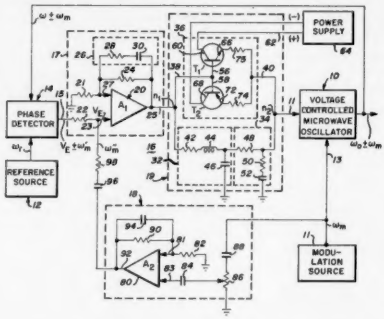


A pair of transferred-electron devices, such as Gunn diodes, are spaced apart in a hollow microwave conductor operating in a TE or TM mode. The Gunn devices are coupled in energy exchanging relation to the fields of the operating mode and are spaced apart by approximately an integer number of full wavelengths and in such a manner that the devices are coupled to approximately equal electromagnetic wave energy fields of opposite phase to obtain a push-pull configuration. Output energy is extracted from the operating mode.

3,810,046
MICROWAVE SOURCE

Drew R. Lance, Saratoga, Calif., assignor to California Microwave Inc., Sunnyvale, Calif.

Filed Feb. 23, 1973, Ser. No. 335,316
Int. Cl. H03c 3/00
U.S. Cl. 332—19 **11 Claims**

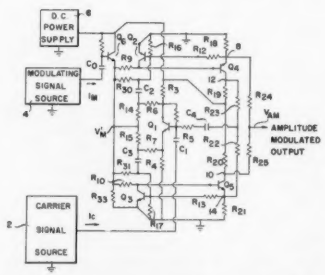


A microwave source including a dual bandwidth phase lock loop and a circuit for developing a modulation cancelling signal for insertion into the loop to cancel any error signal modulation components. In the preferred embodiment the same modulating signal used to modulate the oscillator is shifted in phase by 90° and added to the output of the phase detector. Since the cancelling signal is then 180° out-of-phase with the error signal modulation component, complete cancellation is achieved leaving only the DC error signal for input to the adaptive control network which completes the loop.

3,810,047
INDUCTORLESS AMPLITUDE MODULATOR AND DEMODULATOR APPARATUS

Donald H. Gehring, 401 N. Armistead, Alexandria, Va.

Filed Dec. 8, 1972, Ser. No. 313,432
Int. Cl. H03c 1/52
U.S. Cl. 332—31 R **15 Claims**



An inductorless modulator-demodulator circuit is disclosed including a pair of symmetrical channels each containing a control device biased to Class AB operation. Components of a first input signal are applied to corresponding selected electrodes of the control devices, respectively, the biasing being such that each of the control devices has a constant specific percent of conduction time. Components of a second input signal are applied simultaneously to a pair of electrodes of each control device, respectively, and owing to the specific bias maintained on the control devices, in-phase and out-of-phase components of the output signals of the devices may be added in such a manner that undesired out-of-phase com-

ponents are eliminated through mutual cancellation without filtering, and the in-phase components are added to produce an undistorted output signal. The control devices of the channels of the balanced circuit may be either of the same or opposite polarity, respectively.

3,810,048

RESISTIVE POWER LOAD

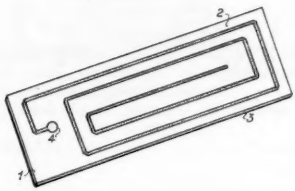
Michel Baril, and Jacques Legendre, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 20, 1973, Ser. No. 334,110

Claims priority, application France, Feb. 24, 1972, 72.06289

Int. Cl. H01p *1/26, 3/08*

U.S. Cl. 333—22 R **6 Claims**



A resistive power load for a microwave line of microstrip type. This load is constituted by a dielectric arranged between a conductor strip made of a metal having good conductivity, and an earthing plane made of a resistive metal alloy having good thermal conductivity. A load of this kind makes it possible to achieve substantial heat dissipation at the expense of only small volume and low weight.

ERRATUM

For Class 333—30 see:
Patent No. 3,810,256

3,810,049

INTEGRATED ATTENUATION ELEMENTS

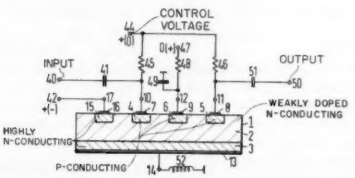
Gerhard Krause, Ebersberg, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Jan. 4, 1973, Ser. No. 321,032

Claims priority, application Germany, Jan. 24, 1972, 2203247

Int. Cl. H01p *1/22*

U.S. Cl. 333—81 R **3 Claims**



An integrated attenuation element having a variable attenuation characteristic for high frequency signals comprises a semiconductor body of one conductivity type having at least three zones of the opposite conductivity type arranged in one face thereof. One of the zones serves as an input for high frequency signals and another of the zones serves as an output, while the third zone serves as a control electrode. An attenuation circuit which employs such an element includes means for applying control signals to the zones to control the attenuation of the element.

3,810,050

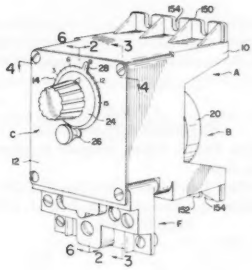
RELAY CLUTCH TIMER

Frank Arthur Pearson, Moline, Ill., assignor to Gulf & Western Industries, Inc., New York, N.Y.

Division of Ser. No. 165,142, July 22, 1971, Pat. No. 3,725,616. This application Nov. 16, 1972, Ser. No. 307,300

Int. Cl. F16d *27/10*

U.S. Cl. 335—75 **4 Claims**



An adjustable reset timer for providing delayed time sequences for electrical circuits. In the timer, an adjustable cam member, including a cam hub having a serrated face is disposed about the drive shaft of a synchronous motor in a free wheeling relationship therewith. A clutch hub member, also having a serrated face, is received over the drive shaft in rotational driving engagement therewith and is axially shiftable along the drive shaft between engaging and non-engaging positions relative to the cam hub. In the engaging position, the serrations on the hubs mate to form a rotational driving connection therebetween so that in that position, the cam member is rotatably driving from a non-engaging to an energizing position relative to at least one load switch. The clutch hub is normally biased toward the engaging position but is prevented from engagement with the cam hub by a retaining lever. The lever is disposed in an operative relationship with an electrical relay which is selectively energizable and de-energizable to permit the lever to be moved between retaining and non-retaining conditions with resultant corresponding movement of the cam hub between the non-engaging and engaging positions.

3,810,051

CIRCUIT BREAKER TRIP AND LATCH MECHANISM

Eugene J. Walker, Beaver, and Alfred E. Maier, Beaver Falls, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

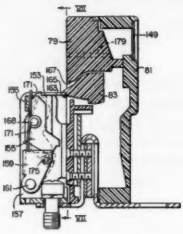
Filed Mar. 27, 1973, Ser. No. 345,396

Int. Cl. H01h *9/20*

U.S. Cl. 335—167 **7 Claims**

A circuit breaker with a thermal and magnetic tripping mechanism for releasing the separable contacts of the circuit breaker in response to overload currents. The tripping mechanism comprising a trip bar responsive indirectly to the overload current for releasing a trip lever which in turn releases a latch lever. The latch lever and trip lever being pivoted on spaced pivot points and the trip lever having a

roller mounted thereon for retaining the latch lever in the latched position and for rolling out of engagement with the

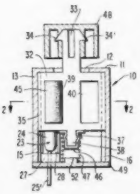


latch lever when the trip lever is released, whereby shorter levers and less force are required to actuate the mechanism.

3,810,052
PUSH BUTTON SWITCH

Makoto Yanaga, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jan. 9, 1973, Ser. No. 322,247
Claims priority, application Japan, Jan. 21, 1972, 47-8123
Int. Cl. H01h *36/00*
U.S. Cl. 335—205 **14 Claims**



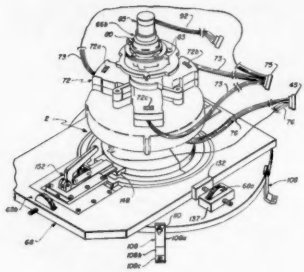
A rectangular case supports a spring biased reciprocating lever of rectangular, block form by engagement of its ends with opposed parallel guide grooves within the sidewalls of the case, the width of the sidewalls at the groove contact area and respective grooves being different for orientation of the lever. Plural reed switches are mounted within a recessed portion of a rectangular protecting frame with a hole within the bottom of the frame receiving one reed switch lead and the lead captured within the groove at the rear of the frame. Frame pits, of corresponding size, defined by strips projecting inwardly from the sidewalls of the case receive the frames. Cylindrical cavities within the lever and flexible stops on opposed sides at the top and bottom of the cavity openings permit insertion and retention of cylindrical permanent magnets within the lever.

3,810,053
DEFLECTION YOKE HAVING RELATIVELY ADJUSTABLE CORE AND COILS

Kenneth W. McGlashan, Laredo, Tex., assignor to Pemcor, Inc., Westchester, Ill.

Filed Aug. 28, 1972, Ser. No. 284,370
Int. Cl. H01f *1/00*
U.S. Cl. 335—212 **12 Claims**

In a deflection yoke assembly for a color television cathode ray tube including a frame adapted to be mounted around the neck of a cathode ray tube, vertical and horizontal deflection coils supported by said frame for respectively producing inside the neck of the cathode ray tube horizontally and vertically extending magnetic fields which respectively effect vertical and horizontal beam deflection in the color television cathode ray tube when vertical and horizontal deflection currents are respectively fed therein, and a core supported by said frame and associated with said horizontal and vertical deflection

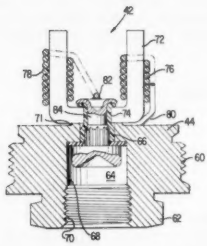


coils for forming a low reluctance path for said magnetic field outside of the neck of said cathode ray tube, the improvement wherein the position of at least one of said core and horizontal deflection coils are supported for fine adjustment relative to the other of same over a range which significantly varies the relative positions of at least two of the similarly oriented traces appearing on the face of the color television cathode ray tube with which it is to be used when the beams thereof are caused to traverse the face of the tube.

3,810,054
AUTOMATIC PILOT VALVE MAGNET CONTACT CONSTRUCTION

Rodney W. Nelson, Los Angeles, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Apr. 26, 1973, Ser. No. 354,576
Int. Cl. H01f *7/08*
U.S. Cl. 335—220 **10 Claims**

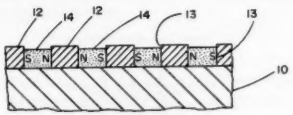


A pilot valve assembly including a valve controlling electromagnet within a housing which is enclosed by a conductive supporting base for the electromagnet. The supporting base includes a cavity therethrough for accommodating an insulated conductive contact member therein which has one end electrically connected within the housing to a coil of the electromagnet and the other end adapted to be connected to a thermocouple when threaded into the cavity.

3,810,055
MAGNETIC HOLDING DEVICE

Theodore D. Wright, 511 Grand Hill, St. Paul, Minn.

Filed May 21, 1973, Ser. No. 361,898
Int. Cl. H01f 7/20
U.S. Cl. 335—285 5 Claims

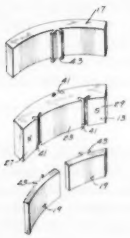


A magnetic cylinder or section of a magnetic cylinder comprises a layer of ferromagnetic material inserted between separate sections of the ferromagnetic material.

3,810,056
NON-MAGNETIZED CERAMIC MAGNETIC ASSEMBLY

Richard F. Jereb, Lindenhurst, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Aug. 28, 1972, Ser. No. 283,948
Int. Cl. H01f 7/02
U.S. Cl. 335—302 8 Claims



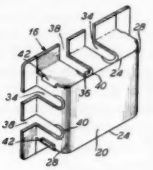
Disclosed herein is a ceramic magnet assembly including a non-magnetized ceramic magnet member having inner and outer concentric surfaces, together with a back iron member connected to the outer ceramic member surface by mechanically interlocking means and a pole shoe member connected to the inner ceramic member surface by mechanically interlocking means.

3,810,057
END ENCLOSURE FOR TRANSFORMERS

Robert W. Franz, Elk Grove Village, and John J. Zielnicki, Northbrook, both of Ill., assignors to Cam-Fram Tool Co., Inc., Chicago, Ill.

Division of Ser. No. 215,058, Jan. 3, 1972, Pat. No. 3,762,205.
This application Jan. 15, 1973, Ser. No. 323,728
Int. Cl. H01f 27/02
U.S. Cl. 336—98 10 Claims

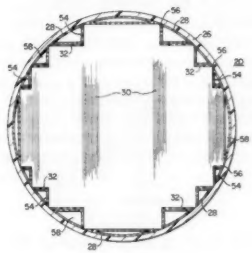
An end enclosure for transformers in which a pair of opposed transverse walls are formed along bend lines which form a square corner with the top wall, said sidewalls having elongated openings which extend up to said bend lines to provide greater access space for conductors. The opposite pair of transverse walls may have top round corners so that said walls tend to counter displacement towards each other. Interlock means may be provided between the first and second pair of sidewalls to prevent outward displacement of the round corner sidewalls and inward displacement of the square corner sidewalls. A method for making such improved end enclosures from planar, deformable sheet material provides removing areas of selected configuration from the four corners of the sheet material, and forming the opposed pair of extending sidewall portions into the sidewalls of the enclosures by moving them along bend lines. A substantially continuous flange portion is formed by moving a bottom portion of each sidewall along bend lines.



3,810,058
EXPANDABLE COIL BRACING TUBES FOR ELECTRICAL INDUCTIVE APPARATUS

Dale White, Sharon, Pa., and Louis Morris, Jr., Campbell, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 28, 1973, Ser. No. 345,812
Int. Cl. H01f 27/30
U.S. Cl. 336—196 5 Claims



A preshaped, hollow, expandable metal tube inserted between a magnetic core and a winding support tube in an electrical inductive apparatus. Expansion of the metal tube after it has been placed into position provides a tight fitting relationship between the magnetic core and the winding support tube, to prevent buckling of the winding support tube during short circuit conditions.

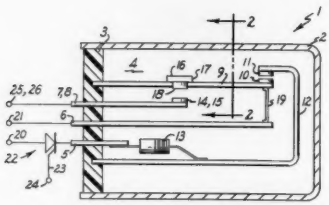
3,810,059
RELAY

Ernest M. Jost, Plainville, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 16, 1973, Ser. No. 351,684
Int. Cl. H01h 61/013
U.S. Cl. 337—25 6 Claims

The disclosure relates to a relay having a gas tight enclosure filled with a noble gas. A spring member carrying a first contact is normally biased to engage the first contact with a second contact within the enclosure. A wire of a selected nickel-titanium alloy is connected to the spring member and is arranged in series with the noted contacts to form a control circuit. When this control circuit is energized, as through an SCR, current directed through the alloy wire heats the wire causing the wire to abruptly shorten in length to separate the noted contacts but to permit a glow discharge to occur across the contacts for maintaining the wire in heated condition with less current being directed through the wire. The spring member carries a bridging contact arm for closing a relay out-

put circuit when the spring member is moved by shortening of the alloy wire. When the glow discharge is terminated, as by



shutting off the SCR, the alloy wire cools and is stretched as the spring member moves in response to its bias to reopen the relay output circuit and reengage the noted control contacts.

3,810,060

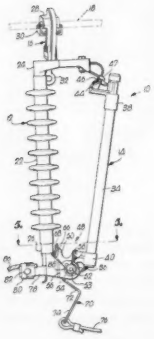
REMOTE CLOSING POWER LOAD PICKUP DEVICE

David G. Hubbard, Centralia, Mo., assignor to A. B. Chance Company, Centralia, Mo.

Filed Mar. 30, 1973, Ser. No. 346,590

Int. Cl. H01h *73/22*

U.S. Cl. 337—155 **12 Claims**



A fused, remote closing power load pickup device for electrically interconnecting an overhead power line with electrical apparatus, wherein is included a switch member movable toward and away from a latching contact therefor with a lever and a lanyard being operably connected to the switching member so that it may be safely shifted from open disposition to its closed position in latched relationship with the contact therefor from a remote location.

3,810,061

HIGH-VOLTAGE FUSE

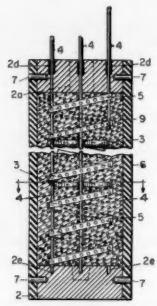
Erwin Salzer, Waban, Mass., assignor to The Chase-Shawmut Company, Newburyport, Mass.

Continuation-in-part of Ser. No. 161,089, July 9, 1971. This application Dec. 4, 1972, Ser. No. 312,191

Int. Cl. H01h *85/04*

U.S. Cl. 337—159 **6 Claims**

A high-voltage fuse having plug terminals a plugged casing, bores in one of the plug terminals, rods removably mounted in the bores of the casing, which form a temporary support for a fusible element wound substantially helically around the aforementioned rods. In the resulting fuse the conventional mandrel of electric insulating or ceramic material generally star-shaped in cross-section is dispensed with. The aforementioned rods are withdrawn when the pulverulent arc-quenching filler filled into the casing provides sufficient support for the long and fragile fusible element or elements. An annular or tubular element of electric insulating material is arranged along the axis of the fuse structure in such a way that it braces the temporary supporting rods for the fusible element or elements against the pressure exerted by the latter, tending to bend said rods radially inwardly. The annular or tubular element may be adapted to perform additional functions.



3,810,062

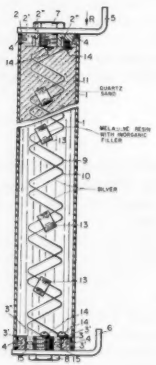
HIGH-VOLTAGE FUSE HAVING FULL RANGE CLEARING ABILITY

Frederick J. Kozacka, South Hampton, N.H., assignor to The Chase-Shawmut Company, Newburyport, Mass.

Filed May 4, 1972, Ser. No. 250,175The portion of the term of this patent subsequent to July 2, 1990, has been disclaimed.

Int. Cl. H01h *85/12, 85/38, 85/08*

U.S. Cl. 337—161 **7 Claims**



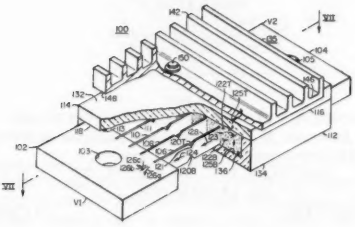
A high-voltage fuse having full range clearing ability, i.e., capable of interrupting overload currents so small that it may take one or even several hours to cause blowing of the fuse on account of the overload currents, and also capable of interrupting major fault currents, and further capable of interrupting all currents between these extremes. This is mainly achieved by threading the fusible elements through relatively large beads of a material having an extremely low thermal

conductivity. Each of the beads may be provided with several substantially parallel bores, or passageways, each receiving one of a plurality of helically wound fusible elements. Such multiple bore beads form spacers between a plurality of helically wound fusible elements not supported by a star shaped mandrel structure, add to their support by a pulverulent arc-quenching filler, and tend to maintain an equidistant spacing between such fusible elements.

3,810,063
HIGH VOLTAGE CURRENT LIMITING FUSE INCLUDING HEAT REMOVING MEANS

Donald D. Blewitt, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 25, 1972, Ser. No. 229,362
Int. Cl. H01h *85/04*
U.S. Cl. 337—166 **12 Claims**



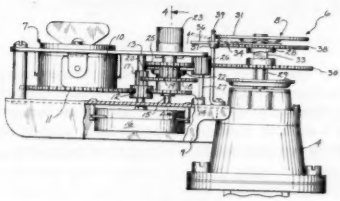
A current limiting fuse structure comprising a plurality of elements of fusible material adapted for higher voltage circuit operation. Each fuse element has a plurality of areas of reduced cross-section to facilitate the generation of a plurality of arclets at the time of melting to limit electrical current in the circuit to be protected by the fuse during the blowing of the fuse. The fuse elements and/or adjacent pulverulent arc quenching material are enclosed by a housing or casing which may be formed from ceramic material. Edges of each fuse element are disposed in intimate physical or structural contact with the associated casing to facilitate the removal or transfer of heat which may be generated in the areas of reduced cross section. The material from which the casing is made is such a composition or type that is a relatively good electrical insulator so as to withstand the voltage of the protected circuit once the fuse has blown and is also a good conductor of heat so as to efficiently remove heat from the enclosed fuse elements. The casing may be formed from a plurality of sections which may be joined to each other and the terminals of the fuse by high temperature epoxy cement. A metallic heat exchanger or heat sink may be assembled or disposed in intimate contact with an outside surface of the casing either by bolting or by using a suitable bonding material cement so that the heat which may be generalized in the enclosed fuse and which may be conducted away from the fuse elements by the casing may be further conducted to the air or similar environment through the associated heat exchanger.

3,810,064
TEMPERATURE CONTROLLER

David D. Flegel, Racine, Wis., assignor to Reliance Time Controls, Racine, Wis.

Filed May 31, 1973, Ser. No. 365,577
Int. Cl. H01h *37/00*
U.S. Cl. 337—304 **7 Claims**

A controller for attachment to a thermostat includes a drive portion and a control portion. The drive portion is actuated by a spring wound motor and includes a gear-and-shaft drive train. The control portion primarily includes a sleeve fixedly mounted to the input control shaft of a thermostat. A gear on the sleeve forms the downstream end of the said drive train. A dial plate having suitable temperature indicia thereon is also mounted to the sleeve, and is manually settable at a mark on a temperature setting indicator post, and to the desired ambient or minimum temperature, as by a control knob connected to a drive train shaft. A clutch permits overriding of the drive train downstream of the shaft. A temperature change member is manually rotatable on the said sleeve to selectively pre-set an

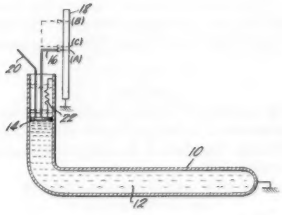


arrow to the desired maximum thermostat temperature setting. After adjusting the temperature change member, it is locked on the sleeve. Actuation of the motor will rotate the sleeve and associated parts until an arm on the temperature change member engages a stop member. Further increase of the thermostat setting is thus prevented, although the motor may keep on running, due to the clutch mechanism in the drive train. The arcuate distance between the forward edge of the said arm and the said arrow is equal to the arcuate distance between the engagement surface of the said stop member and the indicator post mark.

3,810,065
METHOD AND APPARATUS FOR HEAT DETECTION AND CONTROL

James W. Welsh, Summit, N.J., assignor to Standard Motor Products, Inc., Long Island City, N.Y.

Filed Oct. 18, 1972, Ser. No. 298,523
Int. Cl. H01h *37/40*
U.S. Cl. 337—320 **9 Claims**



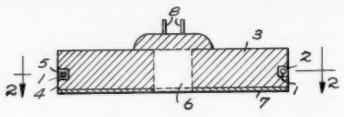
A capillary protector is disclosed in which contained material, vaporizable at a temperature of interest, is maintained in exclusively liquid state when the protector is at a temperature below such preselected temperature. Methods for using such capillary protector and heating apparatus incorporating the same are also disclosed.

3,810,066

PRECISION RESISTANCE FOR MEASURING PURPOSES

Joachim Scholz, Grossauheim, and Raudi Reber, Neuenhasslau, both of Germany, assignors to Deutsche Gold-und Silber-Scheidean-Stalt Vormals Roessler, Frankfurt am Main, Germany

Filed Aug. 17, 1973, Ser. No. 389,158
Int. Cl. H01c 7/00
U.S. Cl. 338—25 5 Claims



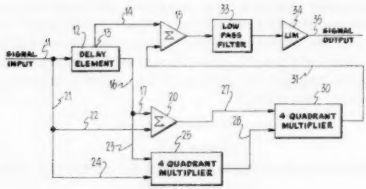
A rapidly responding resistance for measuring purposes which is temperature sensitive on a flat surface comprises a measuring wire in a groove which is located in the surrounding surface of a smooth, cylindrical carrier body slightly distant from the front turned toward the object to be measured.

3,810,067

ELECTRICAL SIGNAL FILTER

Robert F. Heidecker, Longmont, Colo., assignor to Iomec, Inc., Santa Clara, Calif.

Filed May 23, 1973, Ser. No. 362,968
Int. Cl. H03k 5/01
U.S. Cl. 328—164 10 Claims



A filtering technique for removing noise and enhancing the waveform shape of an information signal train. An incoming signal is subjected to a two bit interval delay. The delayed signal is separately summed with and multiplied by the undelayed signal. The resulting sum and product signals are multiplied together and the resulting product signal is summed with the incoming signal delayed by one bit interval. The resulting sum is passed through a low pass filter and used to drive a limit amplifier to produce the filtered output signal.

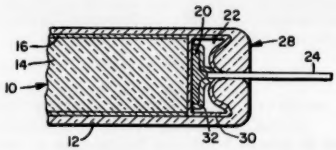
3,810,068

IMPEDANCE ELEMENT WITH MAGNESIUM REACTION TERMINAL CONTACT AND METHOD

Robert D. DeLuca, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed May 7, 1973, Ser. No. 358,014
Int. Cl. H01c 1/14
U.S. Cl. 338—274 19 Claims

An electrical impedance device is hermetically sealed within an encapsulating sleeve while external leads are simultaneously electrically connected thereto. The impedance element is disposed in an encapsulating sleeve which extends beyond the ends thereof. Magnesium is disposed within the ends of the sleeve, and one end of an external lead is placed in each end of the sleeve adjacent to the end of the impedance element. A bead of fusible material is disposed about the lead and is positioned adjacent to the end of the sleeve. Heat is applied to that portion of the assembly so formed including the bead and the end portion of the sleeve to cause the bead to form a hermetic seal with the lead and the sleeve and to cause the magnesium to vaporize and form a conductive cermet



layer which forms an electrical connection between the lead and the electrical terminal of the impedance element. The magnesium also reacts with sleeve and bead to form a magnesium reaction product.

ERRATUM

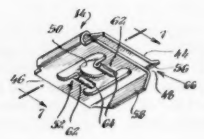
For Class 339—12 see:
Patent No. 3,810,258

3,810,069

GROUNDING CLIP FOR ELECTRICAL FIXTURES

Frank C. Jaconette, Jr., Trumbull, Conn., assignor to Harvey Hubbell Incorporated, Bridgeport, Conn.

Filed Aug. 8, 1972, Ser. No. 278,772
Int. Cl. H01r 3/06
U.S. Cl. 339—14 R 11 Claims



Apparatus for providing a reliable grounding path between electrical fixtures and their mounting boxes, particularly where modifications to the conventional nature of the electrical fixtures are unnecessary. A metal clip is disposed as a conductive interface between the mounting yoke of the electrical fixture and the mounting screw utilized to secure the electrical fixture within the mounting box. Low resistance electrical contacts are maintained by disposing spring members on the clip to exert continual contact pressure against both the mounting yoke and the mounting screw. Sharp protrusions extend from the clip to concentrate the contact pressure exerted against the mounting yoke and the mounting screw is engaged by a screw-receiving means on the clip. A spring means is disposed within the screw receiving means to develop the contact pressure and also provides for self-adjustabliity to pitch variations of the mounting screws or to fixed pitch references of the mounting box.

3,810,070

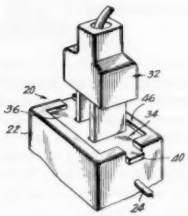
TERMINAL CONNECTOR FOR ELECTRIC EXTENSION CORD

Melvin S. Ludwig, Great Neck, N.Y., assignor to Eagle Electric Mfg. Co., Inc., Long Island City, N.Y.

Filed Sept. 18, 1972, Ser. No. 289,975
Int. Cl. H01r 13/54
U.S. Cl. 339—36 11 Claims

A connector having a body of elastomeric material is molded around one end of an extension cord the other end of

which terminates in a twin-prong plug. An electrically non-conductive rigid safety guard is slidably captive over an exterior surface of the body and has a pair of prong-passing passageways the dimensions and relative positioning of which conform to those of underlying prong-admitting passageways of the connector that lead to a pair of internal electrical female contacts. The prong-admitting passageways of the guard normally are disaligned with the prong-admitting passageways of the connector. However, the guard can be forced into a position in which its prong-admitting passageways are aligned with the prong-admitting



passageways of the connector so as to permit entry of the twin-prongs of a plug into the connector. Forcing the guard to such position resiliently deforms a portion of the elastomeric body, thereby building up a stress which, when the plug is withdrawn, restores the guard to its idle position in which it covers the prong-admitting passageways of the connector and thus prevents a child from being subjected to an electrical shock or burn either through accidental or deliberate insertion of an electrically conductive element into a prong-admitting passageway of the connector or by having the child place the connector in his mouth.

3,810,071

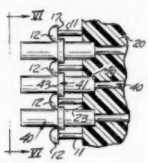
REAR RELEASE CONTACT RETENTION ASSEMBLY

Raymond J. Eifler, Farmington, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 318,343, Dec. 26, 1972. This application Aug. 22, 1973, Ser. No. 390,625

Int. Cl. H01r *13/48*

U.S. Cl. 339—59 M **1 Claim**



An electrical connector assembly that includes means for demountably retaining electrical contacts with the connector. The contact retention assembly includes rearwardly extending latches that are resiliently expandable in a radial direction so that contacts may be demountably retained within a passage surrounded by one or more latches. An additional insert may be used to confine the latches and prevent radial expansion thereof.

3,810,072

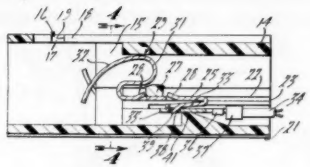
SOCKET

Marvin W. Moore, Rochester, Mich., assignor to Microdot Inc., Birmingham, Mich.

Filed Nov. 22, 1972, Ser. No. 308,757

Int. Cl. H01r *13/54, 33/46*

U.S. Cl. 339—88 R **8 Claims**



Socket bodies of various shapes are molded with a smooth or contoured bore in the former of which a plastic tubular liner is secured to provide the same interior contour for supporting snap-in contacts. The contact has an S-shaped leaf type of terminal secured to one end of a rectangular body portion which has locking tongues thereon. The opposite end of the contact is extended and engaged by conductors of a harness or has conductors fixedly attached thereto. The liner, when used, simplifies the mold for the various socket bodies and provides a standard element for supporting the terminals therewithin.

3,810,073

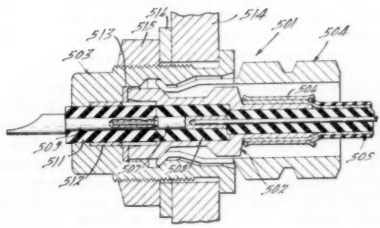
CONNECTOR LOCKING MECHANISM

Donald M. Zajac, Plymouth, and James Kubota, Royal Oak, both of Mich., assignors to Omni Spectra, Inc., Farmington, Mich.

Continuation of Ser. No. 166,363, July 16, 1971, abandoned. This application Jan. 26, 1973, Ser. No. 326,987

Int. Cl. H01r *13/54*

U.S. Cl. 339—91 R **16 Claims**



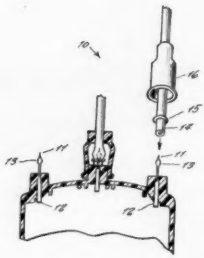
A quick-disconnect device for electrical, mechanical or hydraulic couplings. Plug and receptacle members have longitudinally offset annular grooves with facing locking ends. A coupling sleeve on one member has spring fingers with inclined ends insertable between the facing locking ends to resist axial separating forces of the plug and receptacle members. Uncoupling is effected by sliding the sleeve to extract the fingers. Modifications of the invention control connector disengagement with varying predetermined axial separating forces on the plug and receptacle members.

3,810,074

ELECTRICAL (H. V.) DISTRIBUTOR CAP CONTACTS FOR SPARK IGNITED COMBUSTION ENGINES

Wilson C. Brandenburg, Jr., 2218 Garden Dr., Avon, Ohio

Filed June 14, 1972, Ser. No. 262,453
Int. Cl. H01r 11/20
U.S. Cl. 339—100 1 Claim



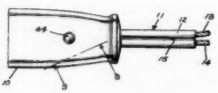
An improved electrical connection of the H. V. leads at the distributor cap of a spark ignited internal combustion engine, by slipping each semi-conducting H. V. lead over an extended end of a pin which has an enlarged portion for better holding the lead captive therearound; there also being an O-ring for improved electrical and mechanical interconnection, and there also being a rain shield molding so to seal out moisture and dust.

3,810,075

ELECTRIC CONNECTOR

Prescott K. Turner, Fairfield, Conn., assignor to General Electric Company, Fort Wayne, Ind.

Continuation of Ser. No. 105,646, Jan. 11, 1971, abandoned, which is a continuation of Ser. No. 811,057, March 27, 1969, abandoned. This application July 5, 1972, Ser. No. 269,172
Int. Cl. H01r 13/58
U.S. Cl. 339—105 10 Claims



A connector for an electric cord, having a resilient jacket, includes a body of electrically insulating material defining a passageway to receive the cord. A pair of partitions extend into the passageway from opposite sides thereof. The partitions overlap and are spaced apart along the passageway a distance less than a corresponding lateral dimension of the cord whereby an adjacent region of the cord is firmly compressed between the overlapping partitions. The body is formed of two sections, joined together, and the cord is compressed in a direction generally perpendicular to the direction of joining.

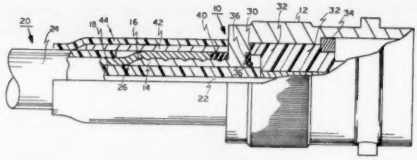
3,810,076

SEALED COAXIAL CONNECTOR

Harold Gregory Hutter, Sunset Cove, Brookfield, Conn.

Continuation-in-part of Ser. No. 25,073, April 2, 1970, abandoned. This application Sept. 28, 1971, Ser. No. 304,556
Int. Cl. H01r 17/04
U.S. Cl. 339—177 R 2 Claims

A sealed coaxial cable connector. A member of a moldable resilient material is provided at the junction between an internal cylindrical opening through the center of a connector body and an enlarged counterbore at the forward end of the body. The member, which may for example be molded to the rear shoulder of the counterbore, has an opening through its center which is sized so that the member coacts with the insulating layer of a coaxial cable, when the cable is inserted into the connector, to seal the opening. An external seal may also



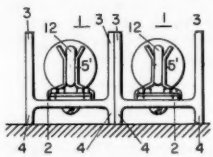
be provided by a gasket of a resilient material positioned at the forward end of a ferrule portion of the connector body, ahead of the connector outer conductor. The gasket is adapted to have a crimp ferrule pass over it, and to be compressed by the crimp ferrule when the ferrule is crimped to form a seal between the crimp ferrule and the body member. The rear end of the crimp ferrule is sealed by passing the ferrule over the outer insulating jacket of the cable.

3,810,077

FUSE HOLDERS

Erwin Salzer, Waban, Mass., assignor to The Chase-Shawmut Company, Newburyport, Mass.

Filed Jan. 31, 1973, Ser. No. 328,423
Int. Cl. H01r 9/08
U.S. Cl. 339—219 F 2 Claims



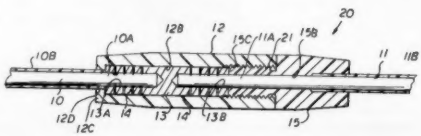
A modular fuse holder system capable of being adapted for various applications is based on fiber re-inforced H-beams having flange portions of different length.

3,810,078

COMPRESSION SPLICE FOR ELECTRICALLY COUPLING ELECTRICAL CONDUCTORS

Joseph L. Chordas, 37 Brookview Ave., Wallingford, Conn.

Filed Feb. 8, 1973, Ser. No. 330,692
Int. Cl. H01r 7/08
U.S. Cl. 339—268 R 8 Claims



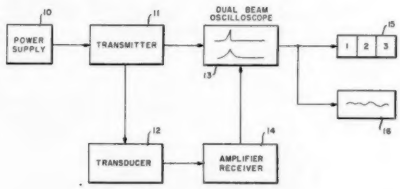
A compression splice for electrically coupling electrical conductors which includes a compressive coupling sleeve adapted to receive the ends of the conductors to be connected. The coupling sleeve is formed of a suitable electrical

conducting material with deformation grooves formed therein which causes the coupling sleeve to deform upon the application of a compressive force. Complementary housing sleeve and compression nut having complementary mating portions are adapted to be received on the ends of the conductors to encase therebetween the compression sleeve which when mated imparts the requisite compressive force onto the coupling sleeve to secure the conductors in electrical connection.

ERRATUM

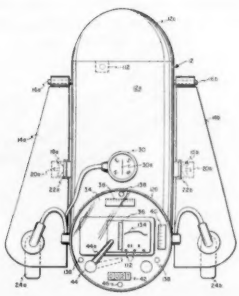
For Class 340—172 see:
Patent No. 3,809,884

3,810,079
PROPAGATION LOSS MEASURING DEVICE
Daniel Barron, 150 Kalmia Dr., Greenbelt, Md.
Filed Sept. 25, 1972, Ser. No. 292,202
Int. Cl. G01s 9/66
U.S. Cl. 340—3 R **2 Claims**



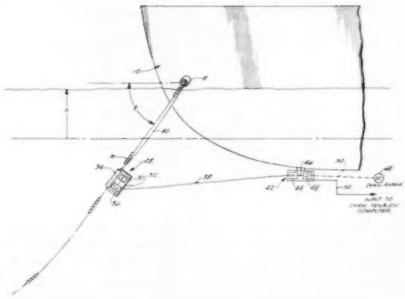
This disclosure is directed to a system for determining the propagation loss of a signal passing through water. A signal generator directs a signal through a hydrophone into the water simultaneous with directing a signal into a computer. The return signal is directed into the computer and the pulse energy of the returned signal is compared with the original signal. The difference is a measure of the signal loss.

3,810,080
SWIMMER-DIVE NAVIGATION AND RECONNAISSANCE DEVICE
Earl K. Hunter, Gig Harbor, Wash., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Oct. 13, 1972, Ser. No. 297,577
Int. Cl. G01s 9/66, 7/52
U.S. Cl. 340—3 R **10 Claims**



A navigation/reconnaissance device is disclosed which comprises a hand-held pressure hull having a viewing port through which a using swimmer-diver views a drift meter for correcting his compass heading to compensate for water currents, a depth meter, a distance meter, and a strip chart recorder showing total water depth and distance traveled vs. time. The hull houses or carries all components for doppler sonar, swimmer-diver depth meter, altimeter, and combinations of the outputs thereof.

3,810,081
SUBMERGED CHAIN ANGLE MEASUREMENT
Paul R. Rininger, Westlake Village, Calif., assignor to Global Marine Inc., Los Angeles, Calif.
Filed Nov. 15, 1972, Ser. No. 306,536
Int. Cl. H04b 11/00; G01l 5/04
U.S. Cl. 340—3 R **20 Claims**

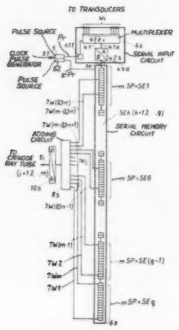


The tension in an anchor chain connected to a floating vessel is measured by a chain angle sensing device coupled to the chain below the surface of the water. The chain angle sensing device is submerged at a depth where the sensed chain angle is substantially identical to the chain angle of inclination existing immediately outboard of its point of support on the vessel, but where wave action energy levels have a substantially negligible effect on the rate of change in the sensed chain angle measurement. In one form of the invention, the chain angle sensing device is an acoustic angle indicator for generating a coded acoustical signal representing the chain angle of inclination. A transponder on board the vessel receives the acoustical signal and decodes it to generate an output representing the instantaneous chain angle measurement. In an alternate form of the invention, a sonic reflector engaged with the chain reflects a train of sonic pulses generated by a sonic transponder onboard the vessel. The transponder receives the sonic pulses from the reflector, and generates a signal representing the measured distance between the transponder and the reflector. Triangulation techniques are used in conjunction with the sonar detected distance measurement to generate a signal representing chain angle. Chain tension information is obtained using sensed chain angle information in conjunction with a graphic diagram in which tension is a function of chain angle, or chain tension can be obtained from an onboard computer programmed to generate chain tension information as a function of chain angle.

3,810,082
CIRCUIT ARRANGEMENT FOR FORMING A TIME SEQUENCE OF SIGNALS
Egidius Arens, Achim, Germany, assignor to Fried Krupp Gesellschaft beschrankter Haftung, Essen, Germany
Filed June 30, 1972, Ser. No. 268,104
Claims priority, application Germany, July 23, 1971, 2136780; Dec. 18, 1971, 2163053
Int. Cl. G01s 3/80
U.S. Cl. 340—6 R **24 Claims**

A circuit arrangement for forming a time sequence of group signals in the ranging art, particularly in the sonar art, and

preferably for a receiving system for signals impinging in a planar wave front, for a momentarily effective characteristic of a group of adjacent, possibly overlapping group characteristics obtained from received signals originating from a number of adjacent transducers from a larger plurality of transducers, in the receiving system. The group signals are formed by varied, quantized time delays determined by the geometrical arrangement of the transducers and by the propagation speed of the impinging signals in the transmission medium. The circuit arrangement employs a single memory circuit having arrangements for the reading in and for the directed reading out of received signals, and a subsequently connected adding circuit of whose output the group signals of the group characteristics appear. An input circuit is provided for the repeated, consecutive interrogation of the respective



momentary received signal from each individual transducer of a plurality *m* of the adjacently positioned transducers. The input circuit is operative for reading the received signals, via a read-in point, in succession and in the same sequence into the memory circuit within which each read-in received signal consecutively occupies in steps memory locations which are further removed from the read-in point. The memory circuit is provided with a number of memory locations which at least and preferably are determined by the maximum time delay for the first interrogated received signal. An output circuit is provided for the destruction-free read-out of the stored received signals from a number of *n* memory locations which correspond to the required time delays with respect to the read-in point. The adding circuit is connected to the output circuit and the group signals derived from the received signals appear in succession at the output of the adding circuit.

3,810,083

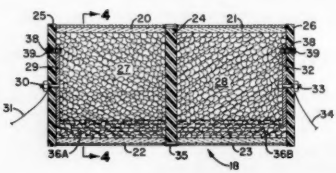
SELF-RIGHTING GEOPHONE

Richard J. Kostelnicek, Houston, Tex., assignor to Esso Production Research Corporation, Houston, Tex.

Filed July 20, 1972, Ser. No. 273,651

Int. Cl. H04b *13/00*

U.S. Cl. 340—8 LF **11 Claims**



Disclosed is a seismic surface cable detector system where the detector comprises axially aligned, tubular, piezoelectric elements having outer metallic coatings and the elements are radially polarized in opposite senses. Electrically nonconductive end walls on the elements define enclosed chambers and at the ends of the chambers are stainless steel electrodes. Mercury is placed in the chambers in an amount less than one-half of the volume of a chamber and provides a reaction mass and an electrical path between the piezoelectric material and the electrode plate. Take out leads are attached to the electrode plates. An open celled foam in the chambers prevents or inhibits splash. The mercury is injected into the chamber by a hypodermic needle which passes through a self-sealing silastic closure.

3,810,084

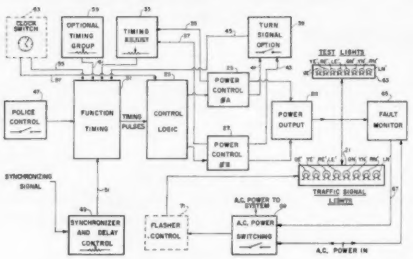
ELECTRONIC TRAFFIC SIGNAL CONTROL SYSTEM

Harold C. Hoyt, Jr., St. Louis, Mo., assignor to Meyer Labs, Inc., St. Louis, Mo.

Filed Mar. 23, 1971, Ser. No. 127,134

Int. Cl. G08g *1/085*

U.S. Cl. 340—41 R **14 Claims**



An electronic traffic signal control system. Logic circuitry is included for providing a sequence of timed changing logic states which define operating periods for a plurality of signal lights. Control means is responsive to the changing logic states for selectively energizing predetermined ones of the signal lights during each of respective operating periods defined by the logic states. Timing circuitry generates timing pulses for causing successive changing of the logic states. Provision is made for manually varying the timing of generation of the timing pulses for preselecting the lengths of the respective operating period defined by each of the logic states.

3,810,085

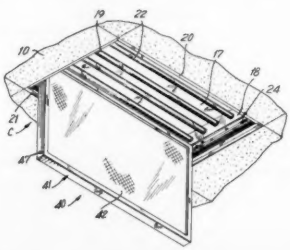
ADJUSTABLE LIGHTING FIXTURE FOR HUNG CEILING INSTALLATION

Leonard E. Woloski, Jersey City, N.J., assignor to Lightolier Incorporated, Jersey City, N.J.

Filed Mar. 29, 1973, Ser. No. 345,863

Int. Cl. H05b *33/02*

U.S. Cl. 240—51.11 **8 Claims**



The present invention is directed to an improved lighting fixture especially adapted for use in a hung ceiling installation

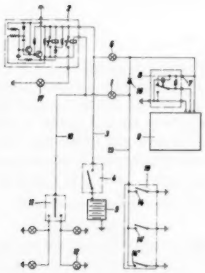
of the so-called "grid" type, and is characterized by the provision of a rectangular housing supported by the ceiling hanger structure and a separate rectangular diffuser frame dimensioned to telescope with the housing. The frame and housing includes complemental mounting devices permitting the vertical spacing between the diffuser and housing to be varied between preselected adjusted positions to compensate for the height characteristics of the ceiling tiles.

3,810,086

ELECTRICAL CONTROL CIRCUIT FOR A CENTRAL WARNING LIGHT OF MOTOR VEHICLES

Walter Bemsel, Stuttgart-Bad Cannstatt, and Hermann Schreiner, Schwieberdingen, both of Germany, assignors to Dr.-Ing. h.c.F. Porsche KG, Stuttgart-Zuffenhansen, Germany

Filed Sept. 7, 1971, Ser. No. 178,309
Claims priority, application Germany, Sept. 8, 1970, 2044383
Int. Cl. B60q *1/38*; G08b *19/00*
U.S. Cl. 340—52 F **7 Claims**



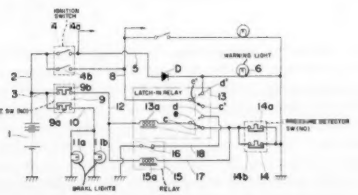
An electrical control circuit for testing the operativeness of a central warning light which serves for indicating the operating condition of one or several electrical monitoring devices for a vehicle which is equipped with an intermittently operable, so-called flasher direction-indicator transmitter whereby the warning light is connected in the circuit between the direction-indicator transmitter and the regulator of a light generator and is controlled by a voltage-dependent element.

3,810,087

FAILURE WARNING APPARATUS FOR OIL PRESSURE BRAKE

Masaru Suzuki, Chiryu, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishikasugai-gun, Aichi-ken, Japan

Filed July 20, 1972, Ser. No. 273,424
Claims priority, application Japan, July 21, 1971, 46-64615
Int. Cl. G08b *21/00*
U.S. Cl. 340—52 B **8 Claims**



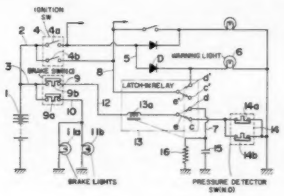
A failure warning apparatus for an oil pressure brake in which a latch-in relay is actuated, when the oil pressure brake is out of order, so as to light a warning lamp until the failure is repaired, thereby to prevent a driver from driving continuously without repairing a failure of the oil pressure brake.

3,810,088

FAILURE WARNING APPARATUS FOR OIL PRESSURE BRAKE

Masaru Suzuki, Chiryu, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishikasugai-gun, Aichi-ken, Japan

Filed Aug. 18, 1972, Ser. No. 281,657
Claims priority, application Japan, Aug. 19, 1971, 46-74446
Int. Cl. G08b *21/00*
U.S. Cl. 340—52 C **7 Claims**



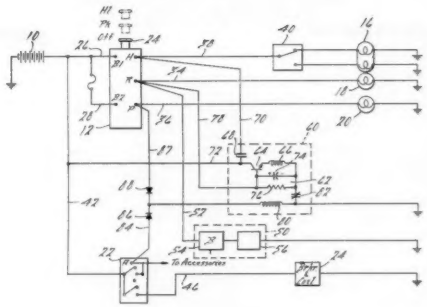
A failure warning apparatus for an oil pressure brake in which a latch-in relay is actuated, when the oil pressure brake is out of order, so as to light a warning lamp until the failure is repaired, thereby to prevent a driver from driving continuously without reparing a failure of the oil pressure brake.

3,810,089

DISCRIMINATING SIGNAL WARNING AND SELECTIVELY OPERABLE TIME DELAY CONTROL SYSTEM FOR LIGHTING CIRCUIT

Dennis E. Florence, Detroit; Frank R. Winders, Jr., Birmingham, and Charles E. Wontrobski, Southfield, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Sept. 30, 1968, Ser. No. 763,712
Int. Cl. B60g *5/00*, *1/04*
U.S. Cl. 340—52 D **10 Claims**



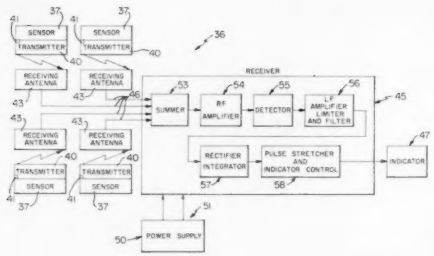
A signal warning and selectively operable time delay control system for a vehicle lighting circuit wherein a warning signal is provided if the lighting circuit inadvertently remains energized through the vehicle light control switch but (the signal) is inhibited if the lighting circuit is temporarily maintained energized from the vehicle battery through the time delay controller; and further wherein a selection of immediate or delayed de-energization of the lighting circuit is available to

the operator in accordance with a predetermined sequence, program or relative order of turn-off operation of the vehicle light control switch and the vehicle ignition switch.

3,810,090
PNEUMATIC TIRE LOW PRESSURE MONITORING AND WARNING SYSTEM

Henry Davis, Jr., and Donald E. Church, both of Richmond, Ind., assignors to Avco Corporation, Richmond, Ind.

Filed Sept. 15, 1972, Ser. No. 289,702
Int. Cl. B60c *23/04*
U.S. Cl. 340—58 **13 Claims**



An improved pneumatic tire low pressure monitoring and warning system is provided which senses a low pressure condition in a pneumatic tire and employs a transmitter which is fixed to a rotatable support for rotation therewith. The transmitter is located off center from the central axis of rotation of the rotatable support and is actuated by sensing means to provide pulse modulated output signals at a radio frequency in response to a low pressure condition in the tire. A receiver is provided for receiving the signals and such receiver operates to improve the character of the output signals while removing undesirable signals and such receiver activates an indicating device in response to a low pressure condition in the pneumatic tire.

3,810,091
WARNING SIGN

William W. Hoover, 725 Grant St., Chenoa, Ill.

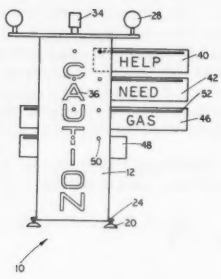
Filed May 11, 1972, Ser. No. 252,358
Int. Cl. G08b *5/00*; **G09f** *13/00*
U.S. Cl. 340—84 **3 Claims**

A portable warning sign including a sign panel, a lens at one edge of the panel, and a battery casing handle extending outwardly of lens portion and supporting batteries and light bulb operable within the lens.

3,810,092
WARNING AND DISTRESS SIGNAL DEVICE FOR A DISABLED VEHICLE

Charles M. Tucker, 59 Twelveoak Hill Dr., San Rafael, Calif.

Filed Nov. 24, 1972, Ser. No. 309,071
Int. Cl. B60q *1/00*; **G09j** *7/00*
U.S. Cl. 340—107 **5 Claims**

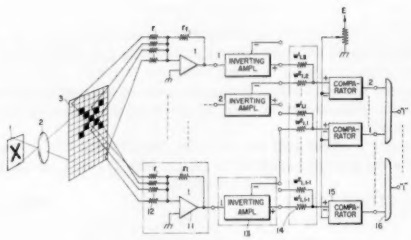


A warning and distress signal device for a disabled vehicle comprising a pair of brightly colored panels attached along their top edges and having rubber suction cup feet for mounting them on the vehicle roof. A series of slides behind one of the panels carries card signs which may be moved to extend laterally of the panels to expose to passing motorists words citing the needs, e.g. "gas," "aid," etc. of the driver.

3,810,093
CHARACTER RECOGNIZING SYSTEM EMPLOYING CATEGORY COMPARISON AND PRODUCT VALUE SUMMATION

Michio Yasuda, Koganei; Hiroshi Makihara, and Shozo Kadota, both of Kokubunji, all of Japan, assignors to Hitachi, Ltd., Marunouchi, Chiyoda-ken, Tokyo, Japan

Filed Nov. 9, 1971, Ser. No. 196,992
Claims priority, application Japan, Nov. 9, 1970, 45-97915
Int. Cl. G06k *9/12*
U.S. Cl. 340—146.3 MA **1 Claim**



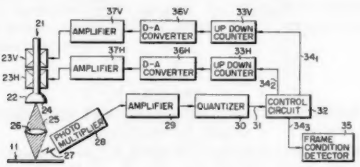
A character recognizing or recognition system charac terized in that, in order to determine the category of an unknown character, a plurality of reference characters are used to compute the correlation between the mutually adjacent reference characters and also the correlation between the unknown character and the reference character; and

the category of the unknown character is determined by pair judgement according to the weighting coefficient determined by said correlation data, whereby the unknown character is recognized. This system makes it possible to average the weight distribution and to minimize the read error.

3,810,094
CHARACTER TYPE DISCRIMINATOR FOR CHARACTER READERS

Kenichi Mori, Yokohama, and Hisao Takebe, Tokyo, both of Japan, assignors to Tokyo Shibaura Electric Co. Ltd., Saiwai-ku, Kawasaki-shi, Japan

Filed July 19, 1972, Ser. No. 273,289
Claims priority, application Japan, July 21, 1971, 46-53906
Int. Cl. G06k 9/02, 7/015
U.S. Cl. 340—146.3 D 6 Claims

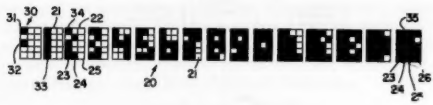


A character type discriminator uses a record medium carrying at least two series of characters to be read out, each type of which differs and which are enclosed with distinguishable frames. The recorded surface of the medium is scanned by a flying-spot scanner. The bright and dark light spots reflected from or transmitted through the medium are applied via a photomultiplier to a quantizer to produce therefrom "1" and "0" binary digits. Output signals from the quantizer are supplied to a control circuit. The control circuit has a pair of output terminals connected to counters for counting the number of elemental points on the medium scanned in vertical and horizontal directions to control the respective deflection coils of the scanner, and has an output terminal connected to a frame condition detector for determining the different physical features of the frames to discriminate the type of characters indicated therein.

3,810,095
FONT OF DIGITAL, OR OTHER, CHARACTERS AND METHOD FOR PATTERN PRINTING THEREOF

Klaus Bibl, Belmont, Mass., assignor to Lowell Technological Institute Research Foundation, Lowell, Mass.

Continuation-in-part of Ser. No. 70,946, Sept. 10, 1970, abandoned. This application Oct. 24, 1972, Ser. No. 299,671
Int. Cl. G06k 9/18
U.S. Cl. 340—146.3 A 13 Claims

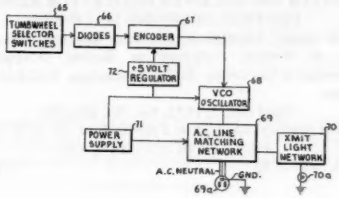


A font of digital numerals, or other characters, has each character formed on one of a set of identical grid-like arrays each having a predetermined number of squares, each successive character in a series being depicted by a predetermined different number of filled squares arranged in the configuration of the character. The numerals one to 15 are each formed by four more squares than their respective values. Ditital data may be generated, electrically transmitted and printed in analog patterns with each number from zero to 15 requiring no more than 20 yes/no decisions.

3,810,096
METHOD AND SYSTEM FOR TRANSMITTING DATA AND INDICATING ROOM STATUS

Jules M. Kabat, and James H. Beggs, both of Las Vegas, Nev., assignors to Integrated Systems Company, Las Vegas, Nev.

Filed Sept. 14, 1972, Ser. No. 289,134
Int. Cl. H04b 13/02; H04q 11/00
U.S. Cl. 340—147 R 15 Claims



A method and system for transmitting data and indicating room status has a transmitter and a receiver utilizing the neutral and ground lines of a conventional AC room power line as a communications link. The transmitter sends coded signals through a wall outlet via the neutral and ground to the receiver and computer where it may be stored for eventual use. Transformers are bypassed from the secondary to the primary in the power distribution system. Data terminals provide a means for selectively displaying the received information as it relates to room status or alarm conditions. Additionally, status boards may be utilized with the received and stored data to visually display room status and conditions for front desk, housekeeping operations or supervisory stations.

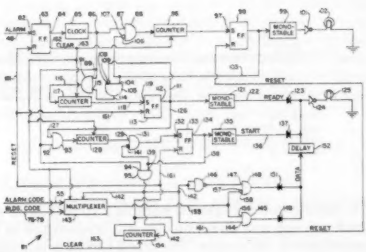
The method of transmitting data and indicating room status includes the steps of

encoding information relating to a room number and status,
transmitting said encoded information on an AC power line using the neutral and ground of same,
receiving said transmitted information, and
indicating the status of said room.

3,810,097
METHOD AND SYSTEM FOR VISUALLY CONVEYING ALARM INFORMATION

Gregory A. Muir, and Craig J. Scherer, both of Box 17112, Denver, Colo.

Filed Feb. 28, 1973, Ser. No. 336,416
Int. Cl. G08b 19/00
U.S. Cl. 340—64 R 21 Claims



Disclosed is a method and a system for conveying alarm information wherein a visual alarm signal is transmitted from a first location in response to the occurrence of a preselected event thereabout. A preselected observer at a different location observes the visual alarm signal and relays notice of the receipt of the signal to proper authorities for response. A plurality of transmitters is utilized, each at a different location, and each transmitter encodes its signal with information in-

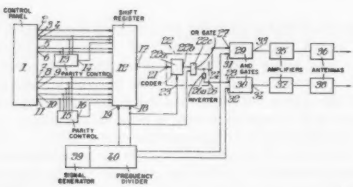
dicating its location and further information indicative of which one of a group of preselected events has occurred. The observer, upon visually observing a signal, focuses a receiving device on the source of the signal. The receiving device decodes the signal to extract the coded information therefrom and furthermore rejects improperly coded or noncoded signals.

3,810,098

EMITTER AND RECEIVER DEVICES FOR REMOTE CONTROL OF MINING MACHINES

Edmond Jamet, Montlucon, and Paul Jaquard, Courbevoie, both of France, assignors to Societe D'Applications Generales D'Electricite Et De Mecanique SAGEM, Paris, France

Filed Oct. 2, 1972, Ser. No. 294,192
Claims priority, application France, June 26, 1972, 72.23059
Int. Cl. H04b *1/00*; H04q *9/00*
U.S. Cl. 340—170 **10 Claims**



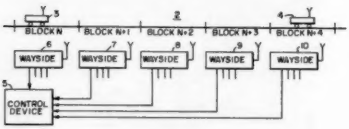
A transmitter device is provided which includes a serial encoder which transforms input control data into a series of binary signals which are subsequently coded into a second series of binary signals. An ascending transition between levels in the second series, e.g., a transition between a binary "zero" and a binary "one", represents one of the levels of the binary signals of the first series and a descending transition represents the other of the levels. The transmitter device also includes a modulator for modulating the signals of the second series with two distinct modulating frequencies.

3,810,099

MEANS FOR PROVIDING A VEHICLE CONTROL SIGNAL CONTAINING DIRECTION AND SPEED INFORMATION

David H. Woods, Ann Arbor, Mich., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 26, 1972, Ser. No. 301,011
Int. Cl. H04q *9/00*
U.S. Cl. 340—171 R **5 Claims**



A vehicle control system, such as a rubber tired system in which a speed and direction signal is transmitted to a vehicle operational in the system. The speed and direction signal is binary coded and frequency modulated such that the respective frequencies of the binary ONES and ZEROS determine the direction of travel, and the order of the binary ONES and ZEROS determines the speed of the vehicle. If the vehicle is to travel in a forward direction along the vehicle travel path, the binary ONE and ZERO signals are at first and second frequencies respectively, and if the vehicle is to travel in the reverse direction along the vehicle travel path, the binary ONE and ZERO signals are at third and fourth frequencies respectively.

3,810,100

LOOPED DIRECT SWITCHING SYSTEM

Laurence D. Hungerford, and Clarence G. Marshall, both of Cedar Rapids, Iowa, assignors to Collins Radio Company, Dallas, Tex.

Filed Dec. 16, 1971, Ser. No. 208,548
Int. Cl. H04j *3/16*
U.S. Cl. 340—172.5 **38 Claims**

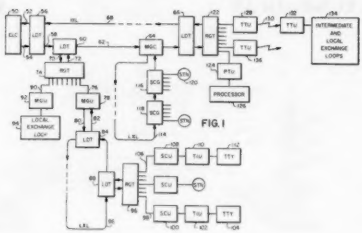


FIG. 1

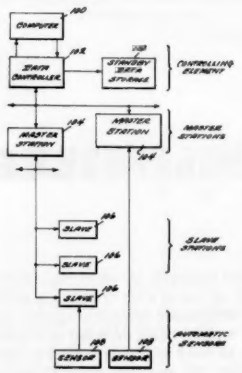
A communication system for transmitting messages between calling and called parties wherein the message is divided into predetermined length blocks and transmitted a block at a time. The concept includes the possibility of a very complex system wherein the message is transmitted via communication links from one node to the next node such that the transmitting party does not have a solid connection to the ultimate receiving party. In other words the transmission of a block from one node to the next is completed and satisfactory receipt is acknowledged before the message block is transmitted to a further node. The message blocks can be transmitted at a time when some of the nodes connecting the calling and called parties are busy with other messages such that the message block is stored in each node of the connection path until the following node is clear to receive a new message block.

3,810,101

DATA COLLECTION SYSTEM

William L. Avery, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Dec. 29, 1971, Ser. No. 213,508
Int. Cl. G06f *15/46, 3/00, 3/04*
U.S. Cl. 340—172.5 **114 Claims**



A system for transferring information from a plurality of data stations to a central station such as a computer. A novel data controller couples the computer to a plurality of master

stations, some of which may in turn be coupled to a set of slave stations, for communicating with the master stations. The data controller operates in three phases — a load phase in which a station address and instructions are loaded into the controller either from the computer or an internal memory within the data controller, an execute phase in which the data controller communicates with the addressed stations and a transfer phase in which the received information is transferred by the data controller to the computer or, if it is malfunctioning, to auxiliary storage devices. Any of a number of unique master stations can be used in the system. A slave multiplexer operates to interrogate a number of associated slave stations of varying types and convey the information thus derived to the data controller when queried. An interactive keyboard permits manual entry of information which is then conveyed to the data controller.

3,810,102

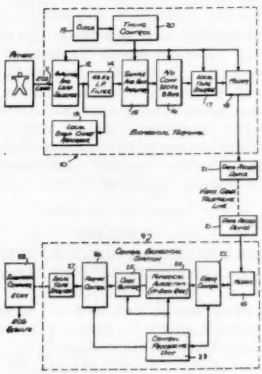
SYSTEM FOR TRANSMISSION AND ANALYSIS OF BIOMEDICAL DATA

William Louis Parks, III, Bethesda; William Luster Grenoble, Jr., Rockville; Henry Herman Harjes, Jr., Clarksville, and Lawrence James McCarthy, Rockville, all of Md., assignors to Telserv, Inc., Rockville, Md.

Filed Mar. 31, 1972, Ser. No. 240,136

Int. Cl. G06f *3/04, 3/05, 5/06*

U.S. Cl. 340—172.5 **11 Claims**



A method and system for transmitting biomedical data to a remote station for subsequent processing. Analog electrical biomedical signals are sampled and digitized at a relatively low data rate and transmitted over a communications link of limited bandwidth to a remote station where the analog electrical biomedical signals are reconstructed from the digital data and are sampled and digitized at a substantially higher data rate for subsequent interpretation by a diagnostic computer. Alternatively, the received digital data are directly converted to a substantially higher digital data rate by means of a numerical algorithm, a form of digital interpolation.

3,810,103

DATA TRANSFER CONTROL APPARATUS

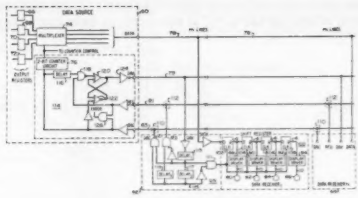
David W. Ricci, Cupertino, Calif., assignor to Hawlett-Packard Company, Palo Alto, Calif.

Filed Apr. 3, 1972, Ser. No. 240,403

Int. Cl. H04q *1/00*

U.S. Cl. 340—172.5 **17 Claims**

An improved data transfer system enables a common data source to operate asynchronously with a plurality of diffeent data receivers at a data transfer rate that is limited only by the operating rates of the data receivers and the data source. The operating conditions of the data receivers are sensed in common by the data source and the operating condition of the



data source is sensed by the data receivers in order to optimize the data transfer rate without loss of data and with restriction to a predetermined (or synchronous) data transfer rate.

3,810,104

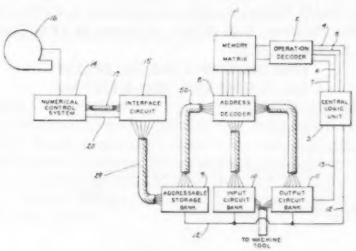
PROGRAMMABLE MAGNETICS FOR A NUMERICAL CONTROL SYSTEM

Theodore J. Markley, Mentor, Ohio, assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed July 31, 1972, Ser. No. 276,283

Int. Cl. G06f *13/00, 15/46*

U.S. Cl. 340—172.5 **10 Claims**



A programmable controller connects to a numerical control system to operate the magnetics on a machine tool. An interface circuit which includes a programmable decoder connects to receive auxiliary command words generated by the numerical control and selectively set addressable storage elements. The programmable controller operates under the direction of a control program, to read the condition of the addressable storage elements, to read the condition of devices on the machine tool, and in response to these conditions operate output devices on the machine tool. A first embodiment of the invention includes a separate read only memory which performs the decoding function and a second embodiment uses a portion of the controller memory to perform this function.

3,810,105

COMPUTER INPUT-OUTPUT SYSTEM

Alfred W. England, Los Angeles, Calif., assignor to Xerox Corporation, Stamford, Conn.

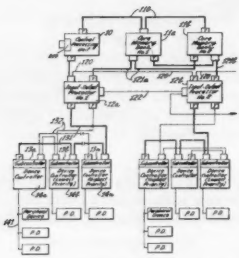
Division of Ser. No. 678,235, Oct. 26, 1967, Pat. No. 3,702,462. This application Aug. 31, 1972, Ser. No. 285,458

Int. Cl. G06f *3/00*

U.S. Cl. 340—172.5 **21 Claims**

A computer system for digital computers is disclosed in which peripheral devices cooperate with "hardware" input-output processors (IOP) independent from the central processor (CPU) of the computer for handling the transfer of data between peripheral devices and memory which is also accessible to the CPU. Signal communication runs through special

transmission facilities which include separate communication paths for the IOPs and CPU to memory, separate communication paths for control and data signals, and separate communication paths for determination of priority of operations among several IOPs and the CPU at memory, or between several IOPs



at the IOP or between several devices at the device. The devices are controlled by device controllers which include subcontrollers which together with a portion of the IOPs provides a communication interface configuration between devices and IOPs.

3,810,106

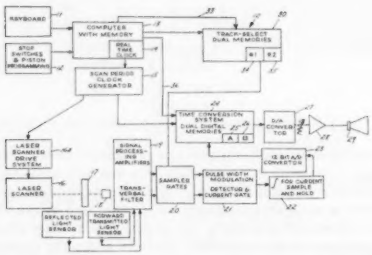
SYSTEM FOR STORING TONE PATTERNS FOR AUDIBLE RETRIEVAL

Bernard David Nadler, Bayside, and Mitchell A. Cotter, Henry Hudson Parkway, both of N.Y., assignors to APM Corporation, Englewood, N.J.

Filed Oct. 5, 1972, Ser. No. 295,234

Int. Cl. G06f *3/00, 7/00;* **G11b** *7/00*

U.S. Cl. 340—172.5 **3 Claims**



A system of storing information as a purality of parallel, finite length tracks, each track constituting a discrete tone pattern, and means for retrieving said tone patterns by orthogonal scanning of said tracks using a single scanning device, whereby the entire field of stored information is substantially simultaneously available for reproduction. The system is particularly suited for audible retrieval, with disclosed application to voice reproduction, vocoders, and electronic keyboard instruments.

3,810,107

ELECTRONIC TEXT DISPLAY AND PROCESSING SYSTEM

Arnold J. Goldman; Stephen L. Kurtin, both of Sherman Oaks, and Carver A. Mead, Pasadena, all of Calif., assignors to Lexitron Corporation, Chatsworth, Calif.

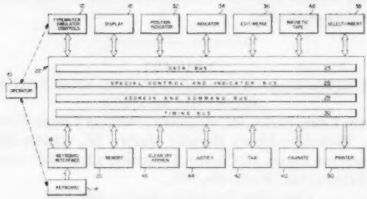
Filed Jan. 18, 1973, Ser. No. 324,776

Int. Cl. G06k *15/02, 15/20*

U.S. Cl. 340—172.5 **15 Claims**

An electronic Test Display and Processing System having a display memory, and a manually operable data and control function entry device for interactive text processing by an operator via a keyboard whereby text entered on the display is modifiable under the control of the operator. By utilization of a position indicator or cursor which is positionable by the operator on the display screen at the desired position with respect to the text the operator can perform text editing functions such as adding a character, deleting a character, adding or deleting a line of text, selecting a block of text from the display for deletion or insertion into another page of text displayed on the screen, or erasing text.

The text editing functions are accomplished by means of a processor receiving commands indicative of operator action as well as commands indicative of internal signals generated in



proper time sequence to perform the functions selected by the operator. The memory includes a display memory capable of storing information in coded form for displaying a full "page" of text; a character buffer for storing information indicative of two characters within a line of text, the two characters being the character currently being displayed as well as the character previously displayed; and a line buffer capable of storing two of the lines of textual information, one line being the line of text currently being displayed while the other line is the line of text previously displayed. Multiplexing and data selection means are provided for sequentially reconfiguring the flow of information through the various storage means within the memory to accomplish the text editing functions.

3,810,108

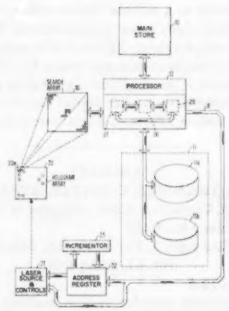
PROCESSOR UTILIZING A HOLOGRAPHIC ARRAY AND A CONTENT ADDRESSABLE STORAGE UNIT FOR HIGH SPEED SEARCHING

Neil N. Krewson; John B. Tait, both of Vestal, and Bruce M. Updike, Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 257,495, May 30, 1972. This application Apr. 26, 1973, Ser. No. 354,585

Int. Cl. G06f *9/19, 9/00*

U.S. Cl. 340—172.5 **12 Claims**



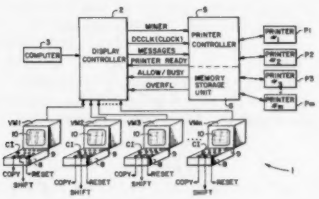
In a data processing system, a holographic array is controllable to change the entire contents (or a part thereof) of a

content addressable storage unit, i.e. an associative storage unit having two-state photoresponsive cells or a functional storage unit having four-state photoresponsive cells during one machine cycle. Thus information is transferred in parallel in a broad band path depending upon the size of the photoresponsive cell array, hologram efficiency, etc. During a succeeding machine cycle, the entire contents of the associative or functional storage unit may be searched in accordance with a search argument to select from the storage unit data which corresponds to the search argument. In this fashion, significant quantities of data are searched rapidly. Within the same system, the holographic array can be controlled during one machine cycle to change the entire contents of additional storage arrays which may be of the associative, functional or location addressable type. In this fashion, storage units such as microprogram control stores, operating system program stores and user application program stores can be rapidly changed, for example, a page (e.g. 2000 bytes) at a time during one machine cycle. This adds a new dimension for information transfer within high performance data processing systems. In one embodiment, read/write hologram arrays, the contents of which are selectively changeable, are utilized to provide a greater versatility and performance to system operation.

3,810,109
STORAGE AND SPACE AVAILABILITY APPARATUS FOR A DATA PROCESSING PRINTOUT SYSTEM

Floyd D. Morris, Pennsauken, and Barry S. Rich, Cherry Hill, both of N.J., assignors to Ultronic Systems, Moorestown, N.J.

Filed July 21, 1972, Ser. No. 273,921
Int. Cl. G06f *3/14*
U.S. Cl. 340—172.5 **12 Claims**



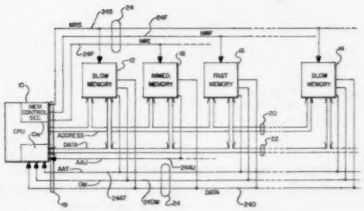
A data processing printout system for providing hard copy of information originating from a computer or from video display terminals. The data processing printout system includes a printer controller having a memory storage unit for storing information, in the form of multi-character messages, originating from the computer or from the display terminals. Messages stored in the memory storage unit are continuously extracted therefrom, even though new messages may, at the same time, be in the process of being entered into the memory storage unit. The extracted messages are applied selectively to printers connected to the printer controller and to which the display terminals are assigned. The computer may cause messages to be printed by any one of the printers.

In accordance with the invention, only messages of a length up to a predetermined maximum permissible length are allowed to be stored in the storage unit for subsequent use by the printers. The availability of space in the memory storage unit for the storage of messages of a length up to the aforementioned maximum permissible length is determined by a space availability arrangement which continuously examines the empty spaces in the memory storage unit to find empty spaces capable of storing messages having lengths equal to the maximum permissible length and allows messages to be stored therein wherever sufficient contiguous empty space is deemed to exist. There are, therefore, no special assigned spaces in the memory storage unit for messages originating from the computer or from the display terminals.

3,810,110
COMPUTER SYSTEM OVERLAP OF MEMORY OPERATION

Alan Kotok, Waltham; Allan R. Kent, Framingham, and David A. Gross, Acton, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed May 1, 1973, Ser. No. 356,147
Int. Cl. G11c *5/06, 9/00*
U.S. Cl. 340—172.5 **7 Claims**

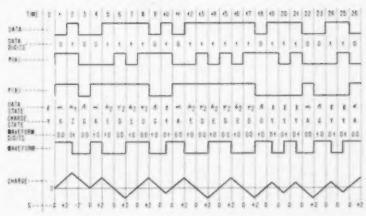


This relates to a digital computer system having a plurality of memories. Retrieval operations in the memories are overlapped so that a retrieval operation in one memory can be initiated before a previously initiated retrieval operation in another memory has been completed.

3,810,111
DATA CODING WITH STABLE BASE LINE FOR RECORDING AND TRANSMITTING BINARY DATA

Arvind M. Patel, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1972, Ser. No. 317,980
Int. Cl. H03k *13/00*; H04l *3/00*; G06f *5/00*
U.S. Cl. 340—172.5 **20 Claims**

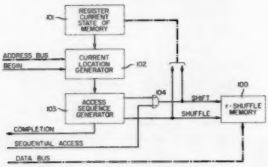


An improved method and apparatus for encoding and decoding binary data is disclosed. For improving data density for storage or transmission, the waveform has an upper frequency limit such that transitions in the encoded waveform occur no closer together than the time for one data digit. To provide suitable clocking for waveform detection circuits, the waveform has a lower frequency limit that transitions occur no farther apart than two data digit times. In addition, the waveform is symetrical about a zero signal level within narrow limits. The encoding is called "zero modulation" (or ZM) for zero direct component. Since the waveform has a constrained direct component, it can be used with circuit devices of the type that will not transmit a direct component. Circuits for detecting errors in the decoded waveform are also disclosed.

3,810,112
SHIFT-SHUFFLE MEMORY SYSTEM WITH RAPID SEQUENTIAL ACCESS

Alfred Vaino Aho, New Providence, and Jeffrey David Ullman, Princeton, both of N.J., assignors to Bell Laboratories Incorporated, Murray Hill, N.J.

Filed Dec. 18, 1972, Ser. No. 316,109
Int. Cl. G06f *7/00*
U.S. Cl. 340—172.5 **14 Claims**

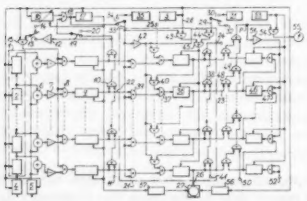


A shift register memory having interconnections among its internal stages permitting stored data to be rearranged in two different ways. A first set of interconnections permits the usual cyclic rotation of data in response to a first "shift" control pulse. A second set of interconnections permits data to be rearranged in a shuffle pattern in response to a second "shuffle" control pulse, similar to the rearrangement of cards in a deck when shuffled. A pair of control registers records the current state of the data arrangement. Addressing circuitry calculates the present storage location of an addressed datum from this state information. Additional circuitry generates an accessing sequence of shift and shuffle control pulses which brings the addressed datum to the output stage of the shift register. After data at two succeeding addresses have been accessed in this fashion, all the data in the shift register have been reordered and succeeding datum addresses may be accessed with a single shift pulse per address.

3,810,113
DIGITAL DATA PROCESSING APPARATUS

James Redmon Jordan, Fife, England, assignor to National Research Development Corporation, London, England

Filed Aug. 17, 1972, Ser. No. 281,273
Claims priority, application Great Britain, Aug. 27, 1971, 40295/71
Int. Cl. G01f *1/100*; G06f *7/02*
U.S. Cl. 340—172.5 **24 Claims**

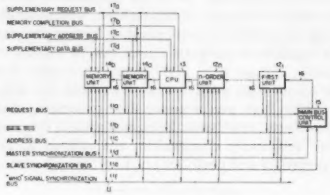


A computing apparatus comprises a set of counters corresponding to different stages of a shift register having a serial input. A binary signal is applied to this input, and the inputs of the counters are gated so that each counts only when the state of the corresponding stage satisfies a particular condition, for example coincidence with the current state of another binary signal. Once the count for any counter has reached a given value a signal is generated indicating for which of the counters this has occurred. A principal use is for identifying the time delay between two related noise signals.

3,810,114
DATA PROCESSING SYSTEM

Hirohide Yamada, and Yoshiaki Nakayama, both of Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Dec. 29, 1972, Ser. No. 319,357
Claims priority, application Japan, Dec. 29, 1971, 46-708; Dec. 29, 1971, 46-2067
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 **10 Claims**

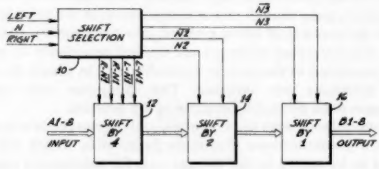


A data processing system wherein a plurality of data processing units including an arithmetic operation unit, memory unit and other units attached to an electronic computer are connected through a main bus in parallel relationship with each other and at least said arithmetic operation unit and memory unit are connected to each other through a supplementary bus. A selected two of said plurality of units are connected to each other through an interface circuit on the side of a main bus assembly under control of a main bus control unit so as to effect exchange of data therebetween. The arithmetic operation unit and memory unit are connected to each other through an interface circuit on the side of a supplementary bus assembly for exchange of data independently of the operating condition of the main bus assembly.

3,810,115
POSITION SCALER (SHIFTER) FOR COMPUTER ARITHMETIC UNIT

John P. Stafford, Oklahoma City, Okla., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Feb. 5, 1973, Ser. No. 329,805
Int. Cl. G06f *7/00*; G11c *19/00*
U.S. Cl. 340—172.5 **9 Claims**

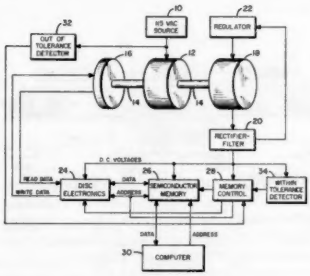


The information bit position scaler or shifter includes logic for shifting eight binary bits of information, bidirectionally, either right or left from one to eight positions, with zero fill, or in a circular mode. The position scaler includes a shift selection unit and units providing layers of shifts of four, two and one. The highest number of shifts are performed first in the shift by four unit, with the direction selection controlling only this unit.

3,810,116
VOLATILE MEMORY PROTECTION

Leroy A. Prohofsky, Minneapolis, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Nov. 24, 1972, Ser. No. 309,017
Int. Cl. G05b 11/00
U.S. Cl. 340—172.5 5 Claims

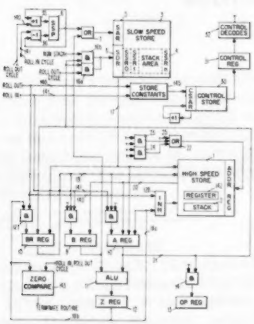


A system for capturing the information stored in a volatile semiconductor memory upon electrical house-power loss is disclosed. The system includes a standby nonvolatile rotating memory-alternator combination which upon power failure utilizes its stored kinetic energy to continue rotating and thus generate the required electrical power to record in the nonvolatile memory the information held in the volatile memory.

3,810,117
STACK MECHANISM FOR A DATA PROCESSOR

Robert A. Healey, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 20, 1972, Ser. No. 299,499
Int. Cl. G06f 13/00
U.S. Cl. 340—172.5 11 Claims

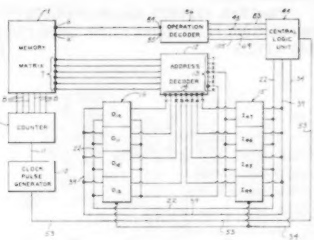


A storage device (hereinafter referred to as a high speed stack) having an access speed compatible with that of its processor has operands and/or operators entered therein (a push operation) and removed therefrom (a pop operation) for processing in a last-in-first-out order. The number of entries stored in the stack at any moment can become very large due to the nesting of operators. Since it is not economically feasible to provide a large capacity high speed stack, overflow of the stack into a slower speed storage device (hereinafter called a low speed stack) is provided. "Roll out" of entries to the low speed stack and "roll in" of the entries back to the high speed stack is effected as the high speed stack becomes relatively full and empty. A backup register, which normally stores the last entry transferred to the low speed stack, permits delay of roll in, roll out operations until the last possible moment. When a new entry is to be stored into the high speed stack (hereinafter referred to as a push operation) and the stack is full, the new entry is put into the backup register, a selected number of entries are rolled out from the high speed stack to the low speed stack and the new entry is then transferred from the register to the high speed stack. Roll in is not initiated even when the high speed stack is empty since the next available entry in the slow speed stack is available in the backup register for fast access by the processor. Only after the entry in the backup register is accessed for processing, the high speed stack being empty, does roll in of entries from the low speed stack to the high speed stack begin. High speed stack top and bottom pointers and a slow speed stack pointer are incremented and decremented to address the stacks and to determine the full, empty states of the high speed stack. With the stack bottom movable, the number of entries left in high speed storage on a roll out (or the number of entries not filled with valid data on a roll in) can be controlled by the roll in and roll out routines. Thus the stack mechanism can be tuned to an optimum based on the program language being processed.

3,810,118
PROGRAMMABLE MATRIX CONTROLLER

William W. Kiffmeyer, Bayside, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Apr. 27, 1971, Ser. No. 137,923
Int. Cl. G05b 11/00
U.S. Cl. 340—172.5 22 Claims

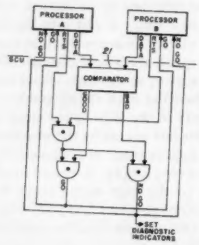


A programmable logic controller operates to read the condition of a plurality of input devices and operate a plurality of output devices in accordance with a set of instructions contained in a stored program. Each instruction contains a six-bit address which is read by an address decoder to activate a specific input or output circuit connected to an external device. Each instruction also generates a two-bit operating signal which is transformed by an operation decoder into one of four separate operations. A central logic unit connects to the operation decoder, connects to receive condition signals from the input devices, and connects to the output devices. The central logic unit performs any one of the four operations: read the condition of an addressed input device; read the inverse condition of an addressed input device; store the result of the read operations; and set an addressed output device in accordance with the stored information.

3,810,119
PROCESSOR SYNCHRONIZATION SCHEME

Robert M. Zieve, Trumbull, Conn.; Christopher L. Maginnis, Turnersville, and Moishe Kleidermacher, Runnemede, both of N.J., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 4, 1971, Ser. No. 140,178
Int. Cl. G05b *11/18, 19/28;* **G06f** *9/18*
U.S. Cl. 340—172.5 **10 Claims**

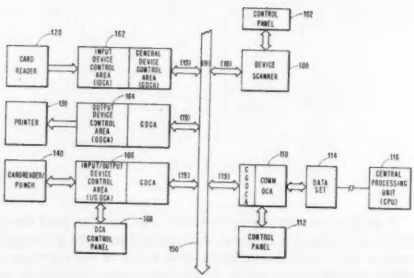


A method of maintaining synchronization between two independently clocked, stored-program computer processors which are executing the same program simultaneously and are connected in a master-slave relationship. There is further provided a method of preventing a failure from disabling both master and slave units. A special function is inserted at selected intervals which delays the master processor until the slave processor catches up. Further, means are provided to automatically detect when a failure occurs. This program alignment and error detection are accomplished by inserting checkpoints at selected intervals at which the redundantly processed results are compared.

3,810,120
AUTOMATIC DEACTIVATION DEVICE

Robert E. Huettner, Acton, and Edward B. Tymann, Natick, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Feb. 12, 1971, Ser. No. 114,876
Int. Cl. G06f *11/06;* **G06k** *17/00;* **G05b** *13/02*
U.S. Cl. 340—172.5 **18 Claims**

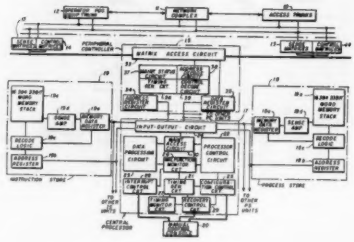


An apparatus is associated with scanning apparatus for a number of peripheral input and output devices connected to a common input/output bus of a terminal system. The apparatus includes means for detecting a failure in any one of the peripheral devices by monitoring the condition of the terminal bus. Upon detecting the presence of a failed device on the bus, the apparatus then determines automatically whether the device is operating as an input or output device and thereafter selectively disables the failed device whereby the terminal system is placed in a state in which it can still continue system data transfer operations.

3,810,121
TIMING GENERATOR CIRCUIT FOR CENTRAL DATA PROCESSOR OF DIGITAL COMMUNICATION SYSTEM

Gregory I. Chang, Oak Park; Rolfe E. Buhrke, La Grange Park; Verner K. Rice, Wheaton, and John J. Mele, Chicago, all of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Apr. 23, 1973, Ser. No. 353,915
Int. Cl. G06f *1/04*
U.S. Cl. 340—172.5 **7 Claims**

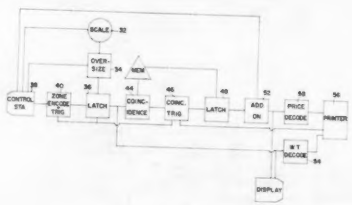


Central data processors are provided in duplicate for a digital communication system. Each processor has its own timing generator circuits; circuits are arranged so that the one in the active central processor generates place and accept levels for both central processors. Circuitry is disclosed for switching timing generators when central processors are switched between active and passive. Circuitry also turns off the standby central processor under hardware or software control and sets up the standby when it has been determined that a switch will be necessary.

3,810,122
READ ONLY MEMORY APPARATUS

William Hecox, Canal Winchester, Ohio, assignor to Exact Weight Scale Co., Inc., Columbus, Ohio

Filed June 30, 1971, Ser. No. 158,269
Int. Cl. G11c *11/42, 15/00*
U.S. Cl. 340—173 LM **3 Claims**



A read-only memory apparatus which incorporates a novel data storing means preferably in the form of a rotatable disk. The code impressed on the disk is not related to shaft position information. The apparatus includes means for creating optical signals responsive to the coded disk and means for sensing and converting the optical signals into electrical signals. These signals are appropriately compared with predetermined reference signals for locating the desired data coded on the disk for retrieval upon command.

3,810,123
MONOLITHIC STORAGE MULTI-EMITTER TRANSISTORS WITH DIFFERENT WIDTH BASES

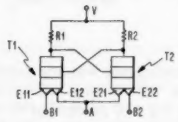
Utz G. Baitinger, Stuttgart, and Knut K. Najmann, Gartringen, both of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1972, Ser. No. 267,324

Claims priority, application Germany, July 29, 1971, 2137976

Int. Cl. G11c *11/40*

U.S. Cl. 340—173 FF **4 Claims**



A monolithic storage matrix having cells formed of multi-emitter transistors in which one emitter of each transistor forms part of the storage circuit and the other emitter of each transistor is coupled to the accessing and retrieval circuits. The transistors portions for storage are formed with bases of a given width and the transistors portions coupled to the accessing and retrieving circuits have a lesser width so that short access times are obtained while the stability of the storage circuit is maintained.

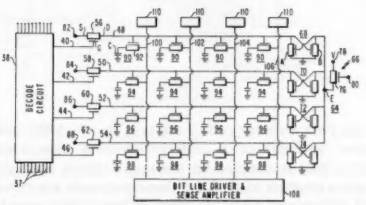
3,810,124
MEMORY ACCESSING SYSTEM

William K. Hoffman, Shelburne, and Albert Y. Kao, Essex Junction, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1972, Ser. No. 267,805

Int. Cl. G11c *11/40*

U.S. Cl. 340—173 R **16 Claims**



A system for accessing a memory line coupled to a plurality of aligned memory cells has only a decode circuit and means for applying a drive pulse coupled to one end of the line, the other end of the line is connected to a pulldown circuit which provides a low impedance path to ground unless it is overdriven by the drive pulse. The drive pulse is applied only to a line selected by the decode circuit.

3,810,125
INTEGRATED CIRCUIT ELECTRICAL CAPACITOR, PARTICULARLY AS A STORAGE ELEMENT FOR SEMICONDUCTOR MEMORIES

Karl-Ulrich Stein, Muenchen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

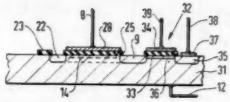
Filed Sept. 5, 1972, Ser. No. 286,267

Claims priority, application Germany, Sept. 30, 1971, 2148948

Int. Cl. G11c *11/40*

U.S. Cl. 340—173 CA **6 Claims**

An electrical capacitor in an integrated circuit form in or on a semiconductor material wherein the capacitor has an insulating layer on the surface of the semiconductor material and an electrically conductive coating with a terminal, the coating arranged on the insulating layer and extending at least at one point up to the edge of the layer. More specifically, the terminal for an inversion layer of the capacitor has an electrical contact provided in the semiconductor surface which reaches at least at one point up to the edge of a metallic coating forming an electrode on the insulating layer. A terminal is connected to the semiconductor material and an electrical bias source is connected between the terminal and the metallic coating for the application of a voltage to produce an electric field across the insulating layer sufficient to form the inversion layer. A matrix of such capacitors and corresponding integrated circuit field effect transistors employ a common semiconductor substrate wherein the electrodes and the selection lines are formed by a two step metalization process and the digit lines comprise doped regions in the substrate contacting the aforementioned electrical contacts of the inversion layer which are also doped regions.



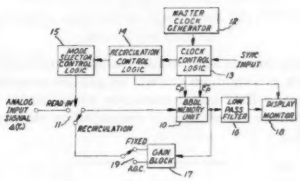
3,810,126
RECIRCULATION MODE ANALOG BUCKET-BRIGADE MEMORY SYSTEM

Walter J. Butler, and Charles McD Puckette, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,351

Int. Cl. G11c *27/00*, *19/00*

U.S. Cl. 340—173 RC **21 Claims**



A bucket-brigade delay line (BBDL) is selectively operable in an analog signal read-in mode or memory recirculate mode with signal storage (hold) intervals therebetween. A clock control logic circuit determines the period for each cycle of read-in and "hold" or recirculate and hold. A recirculation control logic circuit determines the number of recirculations between successive read-ins of new information. A mode selector control logic circuit determines the order in which the BBDL operates in the read-in or memory recirculate modes. A feedback network is connected around the BBDL in the recirculate mode. In the recirculate mode a nondestructive read-out capability is obtained and the information can be read out on a display monitor connected to the output of the BBDL.

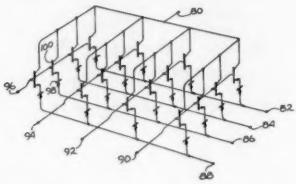
3,810,127
PROGRAMMABLE CIRCUIT — THE METHOD OF PROGRAMMING THEREOF AND THE DEVICES SO PROGRAMMED

Marcian Edward Hoff, Jr., Mountain View, Calif., assignor to Intel Corporation, Mountain View, Calif.

Continuation of Ser. No. 49,097, June 23, 1970, abandoned. This application June 29, 1972, Ser. No. 267,637

Int. Cl. G11c *11/40*

U.S. Cl. 340—173 SP **19 Claims**



A programmable circuit, a method of programming and the devices so programmed wherein a conductive spike is created to eliminate the potential difference across a P-N junction (e.g. by creating a continuous metal bridge across the P-N junction). The spike is created by the application of a pulse of current through the P-N junction.

3,810,128
SEMICONDUCTOR SWITCHING AND STORAGE DEVICE

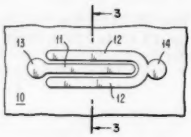
Andreas Moser, Thalwil, Switzerland, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 26, 1972, Ser. No. 292,475

Claims priority, application Switzerland, Sept. 30, 1971, 14201/71

Int. Cl. G11c *11/40*

U.S. Cl. 340—173 R **15 Claims**



A Schottky barrier non-volatile bistable switch and memory device, such as a rhodium contact on gallium arsenide. In one embodiment, a field effect transistor with bistable Schottky contact is made. The latter is employed in storage cell arrangement.

3,810,129
MEMORY SYSTEM RESTORATION

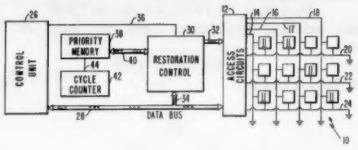
Stephen Barry Behman, Saratoga, and Stephen Goldstein, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 19, 1972, Ser. No. 298,917

Int. Cl. G11c *13/00*

U.S. Cl. 340—173 DR **10 Claims**

Restoration of information in a memory of the type requiring periodic restoration to maintain viability of the information is carried out in a manner dependent on the relative need of memory cells in the memory for restoration. This system includes an array of memory cells in which the stored information must be restored periodically to maintain its viability. Means for accessing the memory cells in the array desirably accomplishes a restoration of a memory cell each time it is accessed. Means for determining a priority list of the memory cells in the array for restoration does so in an order substantially dependent on the relative need of the memory cells for restoration. Means are provided for restoring the memory cells sequentially in the absence of a requested access to the



memory array in accordance with the priority list established by the priority list determining means. In this manner, a memory requiring, e.g., 50 percent of its operating time for restoration may be available 90 or even 100 percent of the time a requested access is made.

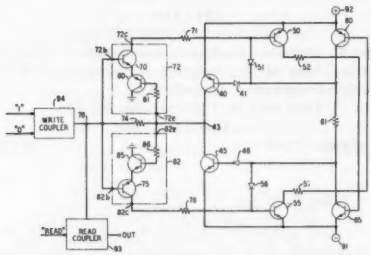
3,810,130
ONE-PORT COMPLEMENTARY MEMORY CELL

Herbert Anton Schneider, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 2, 1973, Ser. No. 356,288

Int. Cl. G11c *11/40*

U.S. Cl. 340—173 R **14 Claims**



A one-port memory cell of the type in which the common collector terminal of a collector-coupled complementary transistor pair is coupled to the input/output port, and the respective emitters of the complementary pair are connected to first and second power sources. When a write signal is applied to the input/output port to transfer the cell state, a switching sequence is established in which an originally conductive transistor of the complementary pair is assured to be nonconductive before the other, originally nonconductive transistor of the pair becomes conductive. Transistor and/or power supply damage during the transition period between cell states is thus avoided.

3,810,131
DEVICES EMPLOYING THE INTERACTION OF LASER LIGHT WITH MAGNETIC DOMAINS

Arthur Ashkin, Rumson, and Joseph Martin Dziedzic, Clark, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

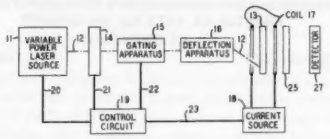
Filed July 18, 1972, Ser. No. 272,787

Int. Cl. G11c *11/14, 11/42*

U.S. Cl. 340—174 YC **7 Claims**

Focused laser light, when partially absorbed to cause localized heating in low coercivity magnetic layers of the type used in conventional bubble devices, is employed to manipulate bubble and strip magnetic domains. Bubbles and strips are thermally nucleated or annihilated as well as captured and moved about freely, by an incident laser beam of variable

power without the use of outside connections, conductor loops or magnetic elements. Bubbles are arranged in fixed arrays and propagated at high velocities through well-defined patterns. Simplified memory devices are disclosed using laser



techniques. There is also disclosed a novel form of reversible strip domain writing in low coercivity layers with the laser beam. Each of the disclosed arrangements has potential application to bubble devices and to various magneto-optical information storage, processing and display devices.

3,810,132

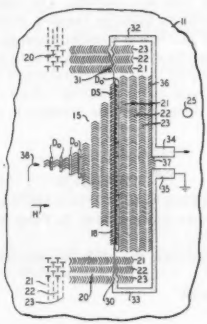
INTEGRATED BUBBLE EXPANSION DETECTOR AND DYNAMIC GUARD RAIL ARRANGEMENT

Andrew Henry Bobeck, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 24, 1972, Ser. No. 309,204

Int. Cl. G11c *11/14*

U.S. Cl. 340—174 EB **7 Claims**



A magnetic bubble expansion detector for a bubble memory is incorporated into a dynamic guard rail encompassing that memory in order to eliminate expanded bubbles after detection without shrinking the bubbles to normal size.

3,810,133

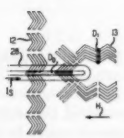
MAGNETIC DOMAIN REPLICATOR ARRANGEMENT

Andrew Henry Bobeck, Chatham, and Irynej Danylchuk, Morris Plains, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 24, 1972, Ser. No. 309,205

Int. Cl. G11c *19/00, 11/14*

U.S. Cl. 340—174 TF **15 Claims**



A magnetic bubble replicate arrangement, when defined by magnetically soft elements which are very closely spaced with respect to one another, provides a variety of advantages such as enhanced operating margins and permits a more flexible memory organization.

3,810,134

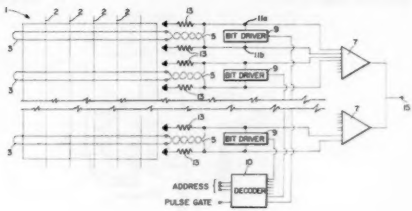
MEMORY BIT DRIVE CIRCUITRY PROVIDING COMMON TERMINATING IMPEDANCE TO A SENSE LINE

Stuart David Culp, Whitesboro, N.Y., assignor to General Electric Company, Utica, N.Y.

Filed July 18, 1972, Ser. No. 272,996

Int. Cl. G11c *11/04, 11/14*

U.S. Cl. 340—174 PW **4 Claims**



In a memory, for example a non-destructive read out matrix memory, improved means are provided for writing into a selected bit line. Each bit is written into a storage cell which is magnetically coupled to a sense pair. In the presnt invention, a bit driver is connected across each sense pair. The bit driver comprises a current source. Consequently, the bit driver does not reflect a load into the sense pair during a write operation. During a read operation, the bit driver presents no impedance to the sense line. Consequently, a common terminating impedance is provided to the sense pair during both read and write, improving memory speed and precision of operation.

3,810,135

CONTROL CIRCUIT OF RECORDING AND REPRODUCING SIGNALS TO AND FROM MAGNETIC TRANSDUCERS FOR MAGNETIC MEMORY APPARATUS

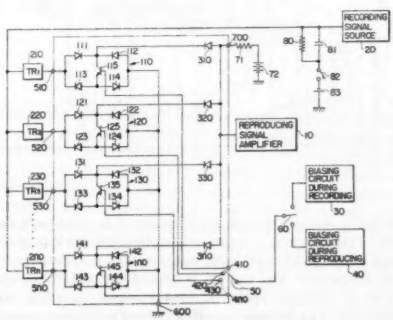
Kanji Kawakami, and Eiji Kaneko, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 13, 1972, Ser. No. 297,301

Claims priority, application Japan, Oct. 13, 1971, 46-80147

Int. Cl. G11b *5/02*

U.S. Cl. 360—63 **7 Claims**



A control circuit for recording and reproducing signals to and from magnetic heads for magnetic memory apparatus has

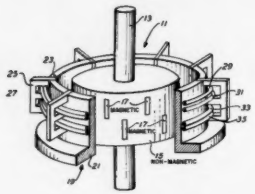
a plurality of full wave rectifier circuits, each of which is connected to a corresponding magnetic head and an NPN transistor is connected between the output terminals of each full wave rectifier circuit. The transistor is saturated during the recording operation of the corresponding magnetic head and switched into an active region during the reproducing operation of the corresponding magnetic head.

3,810,136

DIGITAL POSITION SENSOR

Charles W. Lang, Wayne, and Peter J. O'Hara, Denville, both of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Feb. 15, 1973, Ser. No. 332,682
Int. Cl. G08c *19/08, 19/16*
U.S. Cl. 340—199 **15 Claims**



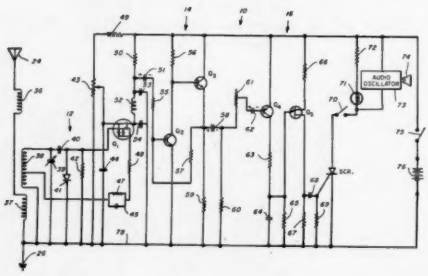
A reliable digital shaft encoder capable of operating at high speeds is shown. A plurality of magnetic segments are embedded in the rotor of the encoder forming two staggered rows. The stator contains a plurality of E shaped magnetic strips through which excitation and pickup coils are wound. Magnetic coupling from the stator strips through the rotor segments induces a voltage in the pickup coils which is then demodulated to provide a position indication.

3,810,137

TORNADO WARNING DEVICE

Kenneth H. Bacon, Jr., and Kenneth H. Bacon, Sr., both of 5398 E. 26 Pl., Tulsa, Okla.

Filed Nov. 13, 1972, Ser. No. 306,010
Int. Cl. H04b *1/16*
U.S. Cl. 340—224 **4 Claims**



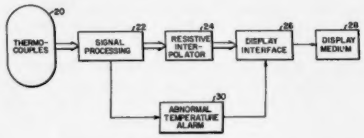
A radio receiver system for warning of an approaching tornado. The device is a regenerative detector tunable over the broad range of 25 to 60 MHz but normally tuned to the 53.25 MHz frequency. The system is capable of extracting from a carrier a tornado audio frequency signal as small as 0.5 microvolts. The tornado signal in the audio frequency range is extracted from the carrier frequency and is amplified by a general purpose amplifier. It is fed to trigger circuit for switching on an audio oscillator and a warning light. These warning devices stay on until they are manually switched off.

3,810,138

INTERPOLATIVE SENSOR OUTPUT VISUAL MAP DISPLAY SYSTEM

Francis T. Thompson, Murrysville; Steven L. Silverstein, and Shan C. Sun, both of Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 10, 1972, Ser. No. 216,691
Int. Cl. G08b *5/00*
U.S. Cl. 340—225 **21 Claims**



A sensor output visual display system is presented for coherently displaying the output readings of a plurality of sensors, such as the in-core thermocouples of a nuclear reactor. The in-core temperature distribution, as detected by the in-core thermocouples, is displayed using light intensity modulation over a reactor core map — the brighter areas on the map corresponding to the hotter areas of the core. The active display area is divided into blocks, each corresponding to a zone within the core representing a fuel rod assembly. Interpolation for assemblies not monitored directly by thermocouples is provided for a coherent display. The interpolation is performed by a resistive plate or resistor matrix constructed to conform to the geometric configuration of the reactor core. The total temperature information is then processed to interface with the display media. A visual alarm feature is included to indicate thermocouple readings which are outside preset limits and for identifying the existence of defective thermocouples.

3,810,139

TEMPERATURE RESPONSIVE SIGNALING DEVICE

Alexander H. B. Fergusson, 1480 N. Palm Ave., Apt. 5, Rialto, Calif.

Filed Nov. 29, 1972, Ser. No. 310,438
Int. Cl. G08b *21/00*
U.S. Cl. 340—229 **4 Claims**

A temperature responsive signaling device comprising a supporting structure adapted to project above a supporting surface, an electrical power source carried by the supporting structure, a light mounted on the supporting structure, a circuit for coupling the power source to the light, a temperature responsive device for opening and closing the circuit to the light in response to predetermined temperatures, and a mechanism for causing the light to flash when the circuit to the light is closed.

3,810,140
APPARATUS FOR THE PROGRAMMED TREATMENT OF BED WETTING

William W. Finley, 5531 S. Birmingham, Tulsa, Okla.

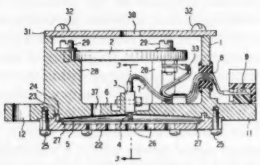
Filed Oct. 30, 1972, Ser. No. 302,357
Int. Cl. G08b 21/00
U.S. Cl. 340—235 8 Claims

A method and apparatus for treatment of patients who have the problem of bed wetting. Whereas, formerly the method of treatment of such patients was to provide a loud alarm and bright spotlights which would be turned on in response to each incident of bed wetting so as to awaken the patient, this system provides two types of alarms. The first type has a loud bell and spotlight which are adapted to immediately awaken the patient. A second alarm is provided which after a selected delay time awakens the patient's caretaker, that is, parent or nurse, who then proceeds to take care of the patient. The choice as to whether a single event of bed wetting will operate the first alarm or the second alarm is preset into the system so that some selected percentage of the events operate the first alarm and the remaining percentage of events operate the second alarm. These can be controlled in a random, or other type of sequence. This improved apparatus treatment of enuresis serves not only to control the habit of bed wetting, but also prevents a relapse of the patient once he has been treated.

3,810,141
BLAST-ACTUATED CONTROL SYSTEM

William Pferd, Mendham, and Eugene Francis Witt, Lake Hopatcong, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 20, 1971, Ser. No. 209,653
Int. Cl. G08b 21/00
U.S. Cl. 340—240 7 Claims



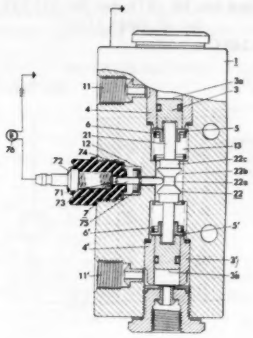
A blast-actuated control system for operatively controlling an alarm circuit in response to shock wave pressure resulting from a nuclear explosion which produces a sudden high rise in the temperature and the pressure of air surrounding the sytem. The control system comprises a housing having a chamber containing a switch actuator and a flat plate. The plate is loosely supported inside the chamber and is adapted for being raised upward for operating the switch actuator in response to the sudden increase in air pressure that is produced by a nuclear blast. Although the blast also produces a sudden high rise in temperature which causes expansion of both the housing and the plate, this expansion will not impede the movement of the plate because of its loose supporting construction.

3,810,142
DEVICE FOR DETECTING AND INDICATING A DIFFERENCE IN HYDRAULIC PRESSURE

Shinya Ito, Tsushima, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisaku-Sho, Nishikasugai-gun, Aichi Prefecture, Japan

Filed July 20, 1972, Ser. No. 273,577
Claims priority, application Japan, July 22, 1971, 46-64212
Int. Cl. G08b 21/00; B60q 1/44; B60t 17/22
U.S. Cl. 340—242 4 Claims

A device for detecting and indicating a difference in hydraulic pressure which comprises a slide bar adapted to slide in the horizontal direction upon receiving hydraulic pressure applied thereto and having a gourd-shaped portion at its central portion; switching mechanism adapted to be actuated

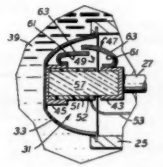


through the movement of said slide bar; and an indicating lamp. The present device is capable of indicating a possible difference in hydraulic pressure and keeping such an indication until the difference in hydraulic pressure is eliminated.

3,810,143
TEMPERATURE COMPENSATED FLUID SENSOR

James O. Lawson, and David F. Thompson, both of Warren, Pa., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Apr. 9, 1973, Ser. No. 349,290
Int. Cl. G08b 21/00
U.S. Cl. 340—244 R 16 Claims

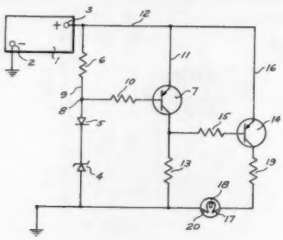


There is described an improved apparatus for detecting the presence or absence of fluid. The apparatus comprises an electrical circuit and a sensor device electrically joined to the circuit. The device comprises a housing member defining a chamber, a thermally conductive member within the chamber, a tip member forming a closure for the chamber, an element within said chamber having first and second spaced apart portions, means for heating this element comprising an electrical resistive element, and first and second heat responsive members respectively affixed to the spaced apart portions and adapted for engaging when the temperature difference between these portions exceeds a predetermined level. The improvement comprises providing a portion of electrically insulative material intermediate and engaging the spaced apart portions whereby the first spaced apart portion is electrically insulated from the electrical resistive element and the second spaced apart portion is electrically connected to the electrical resistive element.

3,810,144
LOW VOLTAGE WARNING SYSTEM

Leland Francis Clouse, Grand Forks Air Force Base, N. Dak., assignor to The Raymond Lee Organization, New York, N.Y., a part interest

Filed Jan. 10, 1973, Ser. No. 322,517
Int. Cl. G08b 21/00
U.S. Cl. 340—248 C **2 Claims**

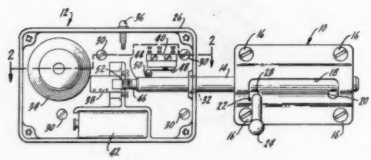


A Zener diode is connected in series circuit arrangement with first resistor and a diode between the positive polarity terminal of a battery and a point at ground potential. A first transistor has an input connected to a common point in the connection between the first resistor and the diode. A second transistor has an input connected to the output of the first transistor. A signal lamp is connected to the outputs of the first and second transistors.

3,810,145
DOOR BOLT WITH ELECTRIC ALARM

Vladas Gusaras, Madison, Wis., assignor to Oak Industries, Inc., Crystal Lake, Ill.

Filed Oct. 27, 1972, Ser. No. 301,589
Int. Cl. E05b 45/12
U.S. Cl. 340—274 **14 Claims**



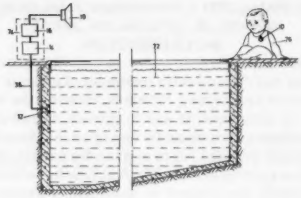
A door bolt with an electric alarm provides an alarm indication after a door bolt has been placed in the locked position and an intruder either severs the bolt, forces the door open or applies great force against the door.

3,810,146
ALARM SYSTEM FOR THE SAFETY OF NON-SWIMMERS

Solomon Nathan Lieb, Johannesburg, South Africa, assignor to Manfred Dworcan, Johannesburg, South Africa, a part interest

Filed Dec. 13, 1972, Ser. No. 314,839
Claims priority, application South Africa, Mar. 22, 1972, 72/1956
Int. Cl. G08b 21/00; B63c 9/00
U.S. Cl. 340—279 **13 Claims**

An alarm system for the safety of non-swimmers comprises a portable transmitter which is adapted to be attached to the body of the non-swimmer and to be activated on immersion in water, and a receiver adapted to operate an alarm on receiving

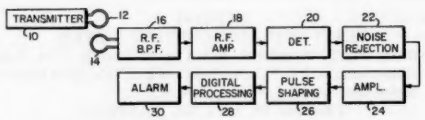


the transmitted signal. The transmitted signal is a mechanical wave having a frequency which is ultrasonic.

3,810,147
ELECTRONIC SECURITY SYSTEM

George Jay Lichtblau, Suite E. -12-D 425 E. 63rd St., New York, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,361
Int. Cl. G01s 9/56
U.S. Cl. 340—280 **24 Claims**

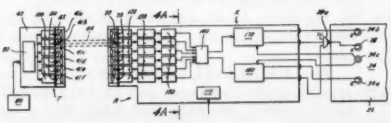


An electronic security system especially adapted for use in retail stores and employing a multi-frequency resonant tag circuit having distinct frequencies for detection and deactivation. A transmitting system provides an electromagnetic field within a controlled area at a frequency which is swept through a range including the detection frequency of the resonant circuit. In the presence of a tag circuit within the controlled area and operative at the detection frequency, pulses are detected by a receiver which includes noise rejection circuitry for discriminating true signals from noise. The receipt of a predetermined number of signal pulses within a prescribed interval of time causes an alarm actuation. The resonant circuit is formed by printed circuit techniques as a relatively small tag which can be affixed to an article of merchandise. The tag includes a fusible link integrally formed as part of the circuit and which can be fused upon application of an electromagnetic field of predetermined magnitude at the deactivation frequency of the resonant circuit. Deactivation of the tag destroys the resonant properties of the tag at the detection frequency such that a deactivated tag produces no alarm when passing through a controlled area.

3,810,148
ELECTRONIC LINE INDICATOR APPARATUS

Fred W. Karsten, Seabrook; James D. Evans, and Sam Lee Pool, both of Houston, all of Tex., assignors to Kewp, Inc., Houston, Tex.

Filed July 6, 1972, Ser. No. 269,468
Int. Cl. G08b 23/00
U.S. Cl. 340—323 **17 Claims**



A new and improved indicator for detecting and indicating the intrusion or presence of objects on a line or boundary

being monitored by officials or monitoring personnel, such as a boundary line at a sporting event or contest.

3,810,149

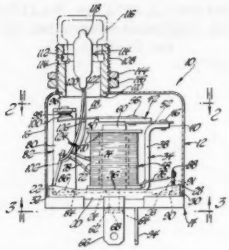
AUDIO-VISUAL SIGNAL DEVICE

Gerald K. Miller, and Norman A. Rautiola, both of Reed City, Mich., assignors to Nartron Corporation, Reed City, Mich.

Filed July 3, 1972, Ser. No. 268,665

Int. Cl. G08b *7/00*

U.S. Cl. 340—326 **9 Claims**



An audio-visual signal device has a housing containing a primary winding, a secondary winding, a make and break switch assembly responsive to the magnetic field generated in the primary winding and an electrical bulb energized in response to energy transfered from the primary winding to the secondary winding; audio signals are produced in response to the making and breaking of a circuit by the switch assembly.

3,810,150

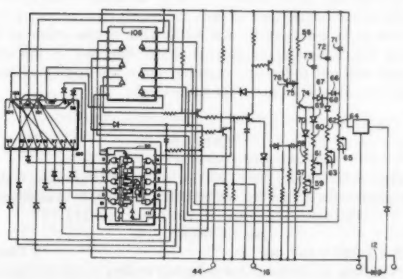
NAVIGATIONAL LIGHT SYSTEM

Thomas A. Jacobs, Houston, Tex., assignor to Tideland Signal Corporation, Houston, Tex.

Division of Ser. No. 211,605, Dec. 23, 1971. This application Jan. 4, 1973, Ser. No. 320,966

Int. Cl. G08b *5/36*

U.S. Cl. 340—340 **2 Claims**



On and off times for a coded flashing navigational light are controlled by a unijunctional transistor timer having different time constant circuits which are individually connected to the transistor by a counter in a sequence determined by a wired code board.

3,810,151

ANALOGUE TO DIGITAL CONVERTERS

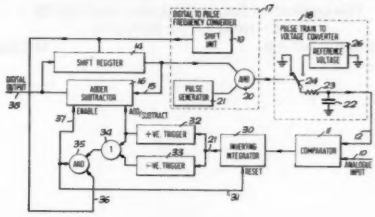
James Stewart Johnston, and David Frank Fellows, both of Bognor Regis, England, assignors to Rosemount Engineering Company Limited, Bognor Regis, England

Filed Aug. 23, 1972, Ser. No. 283,088

Claims priority, application Great Britain, Aug. 26, 1971, 40153/71

Int. Cl. H03k *13/02*

U.S. Cl. 340—347 AD **12 Claims**



An analogue-to-digital converter comprises a digital storage means, a digital-to-pulse train converter converting the output of the digital storage means into a pulse train having a frequency representative of the digital number, a comparator comparing the pulse frequency with an analogue input voltage either by converting the pulse frequency into an analogue signal or the analogue input into a pulse frequency, and means responsive to the output of the comparator for periodically updating the number in said digital storage means.

3,810,152

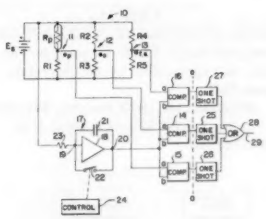
METHOD AND APPARATUS FOR CONVERSION OF A VARIABLE RESISTANCE TO A TIME MODULATED SIGNAL AND FOR ANALOGUE RESTORATION

James A. White, N. Granby, Conn., assignor to Becton, Dickenson and Company, Rutherford, N.J.

Filed Oct. 13, 1972, Ser. No. 297,428

Int. Cl. H03k *13/02*

U.S. Cl. 340—347 NT **15 Claims**



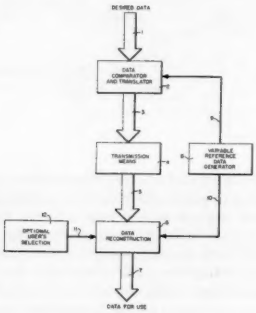
A variable unknown resistance representing any variable parameter which may be converted to a resistance is converted to a time modulated signal wherein a time interval representing the unknown resistance is measured along a time base from an initial time, against a second time interval representing a full scale also measured along the same time base from the same initial time so that the time interval representing the unknown resistance is proportional to the second time interval. An analogue restoration of the time interval representing the unknown resistance is obtained by comparing the full scale time interval to a reference voltage in a manner such that the ratio of the analogue voltage e_{OUT} representing the unknown resistance to the reference voltage e_{REF} is equal to the ratio of the time interval representing the unknown resistance to the full scale time interval. The time

modulated signal may be pulse position modulated or pulse width modulated with the same result being obtained using slightly different circuits. The method of the invention keeps the output independent of system variables.

3,810,153
DATA HANDLING SYSTEM

David Martin Ostfeld, 4802 Irogene, Houston, Tex., and Mauro Guiseppe Togneri, 7626 Westwind Ln., Houston, Tex.

Continuation of Ser. No. 849,287, Aug. 6, 1969, abandoned.
This application Jan. 3, 1972, Ser. No. 215,128
Int. Cl. H03k 13/00; H04j 3/00
U.S. Cl. 340—347 AD 15 Claims

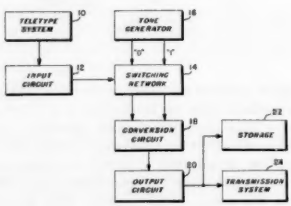


A data handling system wherein data usually in the form of voltage signals at data points or stations are compared to a transient reference variable, e.g., a linear ramp function of voltage against time, and the voltage data translated or encoded to the time reference data which is then transmitted, reconstructed and used, the system being generally illustrated (FIG. 1); the system is particularly applied to an analog data acquisition system (FIG. 2), a digital computer output system (FIG. 3) and a digital data handling system (FIG. 4), among others.

3,810,154
DIGITAL CODE TRANSLATOR APPARATUS

Bob B. Briant, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 10, 1972, Ser. No. 296,426
Int. Cl. H03k 13/00; H04l 3/00
U.S. Cl. 340—347 DD 7 Claims

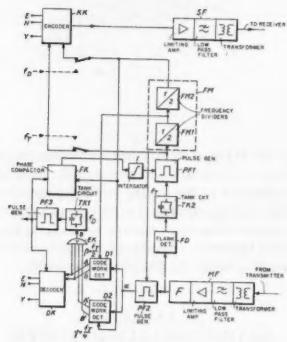


Apparatus for increasing substantially the amount of information that can be transferred by teletype communication systems in a given amount of time without additional increase in bandwidth, transmission facilities, or teletype system equipment. At a transmitting station, parallel, fixed-place digital-coded message characters are translated to serial, variable-place, digital-coded message characters. After reception at a remote station, the received characters are retranslated into output characters which are equivalent to the parallel, fixed-place characters transmitted. The conversion apparatus essentially comprises a switching network which produces in a novel manner digital representations of characters which are equivalent to the corresponding character to be translated.

3,810,155
METHOD AND APPARATUS FOR CODING A DATA FLOW CARRYING BINARY INFORMATION

Walter Herbert Erwin Widl, Bandhagen, and Stig Erik Karlsson, Skarholmen, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Jan. 13, 1972, Ser. No. 217,610
Claims priority, application Sweden, Jan. 26, 1971, 875/71
Int. Cl. H04l 3/00
U.S. Cl. 340—347 DD 8 Claims



The present invention relates to a method of coding a data flow carrying binary information in a local transmission equipment. The data flow comprises two kinds of data signal elements and control signal elements, whereby an optional polarity on the line terminal of the transmission can be selected. The coding method uses four different binary code words 0101, 1010, 0011 and 1100, so that the first kind of the data elements corresponds to one of the code words 0101 or 1010 and the other kind of the code words corresponds to one of the code words 0011 and 1100. One or the other of the code words is selected so that more than two of the code words will not follow one another upon the coding of more than two data elements of the same kind.

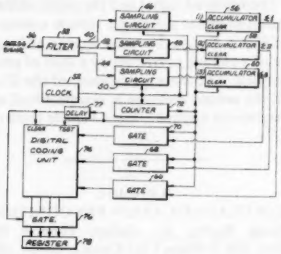
3,810,156
SIGNAL IDENTIFICATION SYSTEM

Robert N. Goldman, 16661 Akron St., Pacific Palisades, Calif.

Continuation of Ser. No. 46,352, June 15, 1970, abandoned.
This application Apr. 5, 1972, Ser. No. 241,391
Int. Cl. H03k 13/18
U.S. Cl. 340—347 AD 7 Claims

A system is disclosed for reducing analog signal patterns or sequences to concise digital representations for identification, as to recognize an audio signal, for example, manifesting a musical recording. In the system, audio (analog) signals are sampled for dissection into a plurality of values which are accumulated over a sampling interval to provide an aggregate value. Preliminary to such a sampling operation, the signal of interest may be frequency dissected into a plurality of individual signals which are sampled then summarized or

totalled. The aggregate total numerical values are reduced to a representative form by encoding them in accordance with

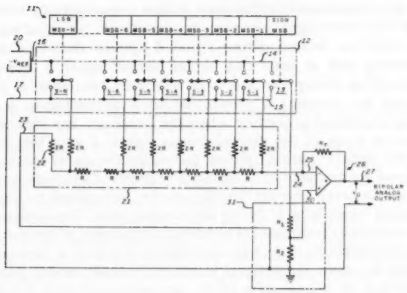


their relative significance. Operation over repeated sampling intervals affords an expanded basis for indentification and recognition.

3,810,157
BIPOLAR DIGITAL-TO-ANALOG CONVERTER

Frank H. Kallio, Anchorage, Alaska, assignor to Sperry Rand Corporation, New York, N.Y.

Filed Feb. 14, 1972, Ser. No. 225,794
Int. Cl. H03k *13/14*
U.S. Cl. 340—347 DA **6 Claims**

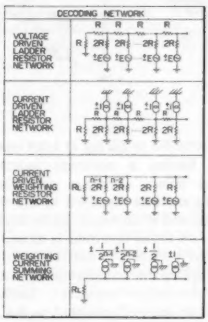


A digital-to-analog converter for transforming signed binary numbers to analog form comprises a plurality of single pole-double throw switches having first contacts commonly connected to a source of reference potential and second contacts commonly connected to ground potential. The positions of the wipers of the switches are controlled by the respective digits of the number to be converted. The wipers of the switches associated with the magnitude digits of the number to be converted are connected to an R-2R resistance ladder network. The output of the resistance ladder network is connected as an input to a differential amplifier capable of operating in an inverting or non-inverting mode. The other input of the differential amplifier is resistively coupled to the wiper of the switch associated with the sign digit of the number to be converted whereby the output of the differential amplifier provides an analog signal of polarity and magnitude representative of the signed binary number to be converted.

3,810,158
DECODING SYSTEM

Junzo Murakami, Kawasaki; Shigeo Asakawa, Tokyo, and Keiji Takeuchi, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Continuation of Ser. No. 859,879, Sept. 22, 1969. This application Dec. 16, 1971, Ser. No. 208,811
Claims priority, application Japan, July 9, 1968, 43-47534; Aug. 13, 1968, 43-57125; Aug. 13, 1968, 43-57126; Aug. 14, 1968, 43-57381; Oct. 26, 1968, 43-69116; Oct. 26, 1968, 43-69117
Int. Cl. H03k *13/04*
U.S. Cl. 340—347 DA **5 Claims**

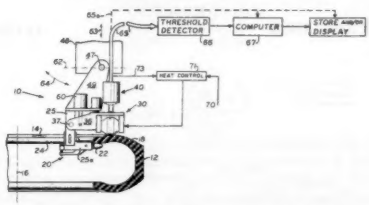

DECODING NETWORK
VOLTAGE DRIVEN LADDER RESISTOR NETWORK
CURRENT DRIVEN LADDER RESISTOR NETWORK
CURRENT DRIVEN WEIGHTING RESISTOR NETWORK
WEIGHTING CURRENT SUMMING NETWORK

A decoding system comprising a network including a plurality of signal supply terminals respectively corresponding to individual digits in the form of binary code, a signal source generating electric signals of three different values in response to the most significant digit and each corresponding digit, said electric signals being selectively applied to the corresponding signal supply terminals by means of switching circuits.

3,810,159
APPARATUS AND METHOD TO EFFECT IR READING OF A RELIEF PATTERN

William L. Hinks, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 3, 1972, Ser. No. 240,620
Int. Cl. G06k *9/00*
U.S. Cl. 340—146.3 R **8 Claims**



Reading of an identification pattern in relief to the surface area of a material is accomplished by creating a temperature difference between raised and recessed portions of the pattern. Either heating or cooling the inclosed area of the pattern by conduction provides emitted infrared radiation having energy levels indicative of the temperature of the raised and recessed areas. The radiation energy is detected by IR sensors that convert the radiation to electrical signals indicative of the relief pattern in the material. Output apparatus converts the sensor signals to an equivalent readout or display of the pattern.

3,810,160
SWITCHING MATRIX

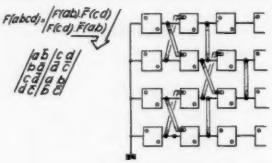
Jean Hedde, 1, rue des Platenes, 91 Orsay, France

Filed Nov. 9, 1972, Ser. No. 305,061

Claims priority, application France, Nov. 16, 1971, 71.40895

Int. Cl. H04q 3/00

U.S. Cl. 340—166 R **2 Claims**



A switching matrix for realizing at least one or more transcoding function having a constant switching time-delay between different binary variables comprises an array of identical switching circuits disposed in the form of a matrix table having *n* lines and *m* columns. Each circuit comprises an input terminal C, an input terminal E of said applied binary variable, an output terminal L and an auxiliary output terminal S which supplies the complemented value of the value which appears at the output terminal L. Each succeeding circuit on a line has an input C coupled to the output L of the preceeding circuit which is located on the same line and each preceeding circuit on a line has an output L coupled to the input C of the following circuit which is located on the same line. The inputs C of the circuits of the first column are all connected to ground. Means for provide selected connections between different circuits through the intermediary of the terminals L, E and S and means are provided for applying said binary variables to said terminals E. The structure of each circuit is such as to have the following relations between the input and output values :

$$S = E \cdot \text{AND} \cdot C \text{ and } \overline{L} = \overline{S}.$$

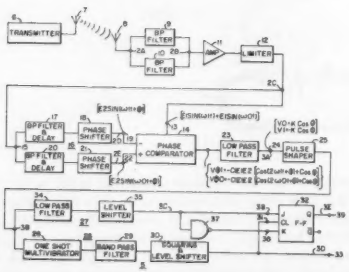
3,810,161
APPARATUS FOR RECEIVING A FREQUENCY AND PHASE CODED VEHICLE CONTROL SIGNAL

Arun P. Sahasrabudhe, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 15, 1973, Ser. No. 341,647

Int. Cl. H04q 9/00

U.S. Cl. 340—170 R **10 Claims**



A vehicle control signal, for example a vehicle speed command, is binary coded wherein the message content is frequency coded such that a binary one indication is at a first frequency and a binary zero indication is a second frequency. Timing information is phase coded, such that a shift in phase of a binary indication is indicative of a change from one bit to the next of the vehicle control signal. The vehicle control signal is received and is then shifted in phase an angular amount ϕ. The received signal and the phase shifted signal are then multiplied together yielding a vehicle control signal proportional to Cos ϕ. For each sensed change of frequency, or in the absence of a change of frequency a shift of phase, a timing pulse is provided. The message content of the Cos ϕ signal is also sensed, the sensed message is synchronized with the timing pulses to provide a synchronized vehicle control signal.

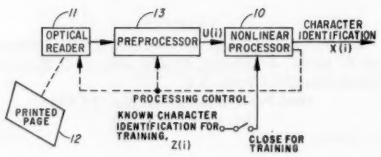
3,810,162
NONLINEAR CLASSIFICATION RECOGNITION SYSTEM

William Steele Ewing, Jr., Dallas; Thomas Walter Ellis, Richardson, and William Clay Choate, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed June 1, 1970, Ser. No. 42,428

Int. Cl. G06f 15/18

U.S. Cl. 340—172.5 **6 Claims**



In a classification recognition system comprised of a trainable non-linear signal processor having at least one input signal U and one desired output signal Z applied thereto during training and at least one actual output signal X derived therefrom during execution, an improved subsystem is provided for selecting a proper output X according to some predetermined procedure when the processor has identified two or more of the desired output signals Z with the same input signal U during training. Generally, the signal processor stores the desired output signals in registers of a tree-allocated memory array wherein the allocation is determined by a particular input signal U during the training cycle. The subsystem is essentially comprised of an artificial extension of the tree-allocated memory array wherein different values of Z associated with the same input signal U are individually stored during training. In an execution cycle, one or more of such Z's may be selected to become the output X for an input U. In one embodiment of the invention only one of such Z's is selected according to a predetermined scheme whereby the most likely Z is selected to be the actual output X.

3,810,163
RESIDENTIAL ALARM SYSTEM

William A. Arnold, 20 Holmes Ave., and Roger E. Miller, R.D. No. 1, both of Apalachin, N.Y.

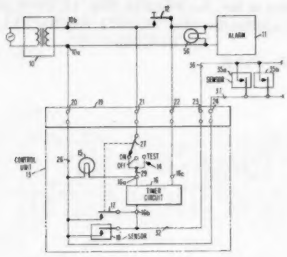
Filed July 26, 1972, Ser. No. 275,433

Int. Cl. G08b 23/00

U.S. Cl. 340—310 R **3 Claims**

Alarm control apparatus for installation in parallel with an actuator switch for an already-installed power supply and annunciator arrangement, which is operable upon occurrence of a predetermined change in environmental conditions, to automatically and repetitively activate the annunciator. Use is

made of existing equipment without interference with its normal function. The solid state alarm system permits attachment

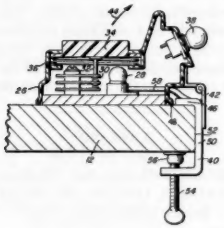


of a variable number of environmental sensors and is energized only upon activation of one or more of the sensors.

3,810,164
COMBINATION SIGNALLING AND ADVERTISING SYSTEM

Adelor A. Lambert, P.O. Box 427, Round Lake, Ill.

Filed Mar. 21, 1972, Ser. No. 236,751
Int. Cl. G08b 5/36
U.S. Cl. 340—332 **3 Claims**



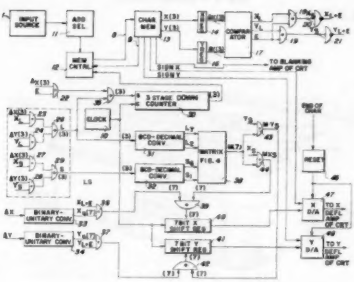
A combination signalling and advertising system comprising a plurality of switches mounted on a bar counter top or the like, each including a lamp actuated by positioning a drinking container on the switch, the switches being arranged in groups, corresponding to service areas, a master indicator including signal lamps each corresponding to a particular group of switches and actuatable by any switch of that group, and an advertising display associated with the master indicator and being enhanced thereby when the signal lamps are energized. Each switch is provided with a hinged mounting which permits it to be swung upwardly for easy cleaning of the counter top surfaces.

3,810,165
ELECTRONIC DISPLAY DEVICE

Jerome A. Rosenthal, Brighton, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 28, 1971, Ser. No. 212,922
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A **6 Claims**

Apparatus for generating characters or symbols on the screen of a cathode ray tube by deflecting the electron beam along a predetermined path in accordance with signals derived from a character memory. When the deflection increments along the X and Y axes are equal, signals are generated in binary to unitary converters for input to X and Y shift registers which in turn generate bit streams to be applied to digital to analog converters. The bit streams are integrated in the digital to analog converters and strokes generated. The strokes are then applied to the deflection amplifiers of the cathode ray tube. When the deflection increments along the X and Y axes are unequal, the smaller increment is determined by a comparator circuit. The smaller and larger increments are then routed to binary to decimal converters and thereafter to a

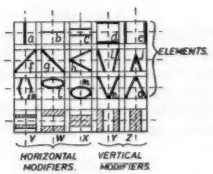


matrix circuit where signals are generated for application to the shift register having the smaller increments. In this mode of operation the larger increment is loaded into the shift register via a binary to unitary converter as in the case where the increments are equal.

3,810,166
ELECTRONIC CHARACTER GENERATING SYSTEMS

Laurence Walter Atkin, Richmond, England, assignor to Aston Electronic Developments Limited, Deepcut, Camberley Surrey, England

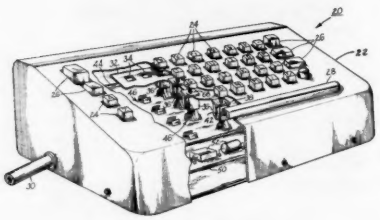
Filed May 4, 1973, Ser. No. 357,142
Claims priority, application Great Britain, May 5, 1972, 20983/72
Int. Cl. G06f 3/14
U.S. Cl. 340—324 AD **22 Claims**



An electronic system for generating characters for television display by employing selected combinations of analogue waveforms. Ramp waveforms, usually of sawtooth form, are generated at line and field periods and are used to generate in turn triangular and parabolic waveforms.

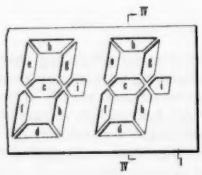
A memory contains data representing the shape of individual elements of characters for each quadrant of a display area and is actuated by a digital store. The memory serves to gate selected combinations of all the waveforms, together with blanking waveforms derived from the triangular waveforms, to synthesize a video character waveform. Means is provided for producing from the video character waveform a further video waveform, defining an area to outline the characters, which acts on a conventional video signal to hold the latter at the black level so that the video character waveform can be inserted thereon.

3,810,167
MAGNETIC KEYBOARD ENCODING DEVICE
Francis H. Shepard, Jr., Summit, N.J., assignor to Vogue Instrument Corporation, Plainview, N.Y.
Continuation-in-part of Ser. No. 724,767, April 29, 1968, Pat. No. 3,683,110. This application Sept. 1, 1971, Ser. No. 176,928
Int. Cl. H04l *15/06*
U.S. Cl. 340—365 **20 Claims**



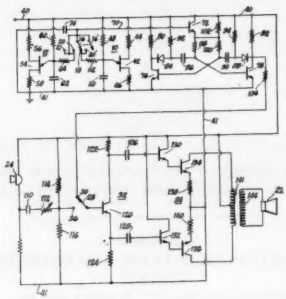
Each key in the encoding keyboard has a key module which, when assembled into the keyboard, forms a magnetic flux path around one or more conductors. A small permanent magnet is in the magnetic flux path. When the key lever is depressed, an air gap is formed in the flux path by movement of an armature. Then, the armature is snapped rapidly back into place so as to quickly close the air gap and, thereby, rapidly decrease the reluctance of the magnetic path and increase the flux flowing in the path. The flux suddenly stops changing abruptly when the armature suddenly stops as it returns to its rest position. That flux change induces voltage pulses in the conductors encircled by the flux path. The number of conductors passing through each flux path varies in accordance with a code. Means are provided for detecting the voltage pulses developed in the conductors to thereby digitally encode the character represented by the key. The conductors preferably are on a printed circuit board which includes one or more magnetic members which are used, when assembled with the key modules, to complete the magnetic paths for the keys.

3,810,168
LUMINOUS DISPLAY PANEL WITH GEOMETRIC SEGMENT MATRIX AND DIFFUSER PANEL
Rintaro Nishina, Yonezawa, Japan, assignor to Tamura Electric Works, Ltd., Tokyo, Japan
Filed Mar. 27, 1972, Ser. No. 238,063
Claims priority, application Japan, Mar. 31, 1971, 46-23100[U]
Int. Cl. G09f *9/34*
U.S. Cl. 340—383 **1 Claim**



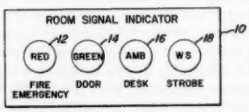
In a luminous display device of the type comprising a substrate, a plurality of depressions formed in one surface of the substrate, a plurality of lamps disposed in respective depressions and means for selectively lighting the lamps so as to display a selected pattern, there is provided a light diffusing layer convering the depressions.

3,810,169
ELECTRONIC SIREN SYSTEM
Philip F. Locke, 319 Highland Rd., Ithaca, N.Y.
Continuation of Ser. No. 884,828, Dec. 15, 1969, abandoned. This application May 15, 1972, Ser. No. 253,407
Int. Cl. G08b *3/10*
U.S. Cl. 340—384 R **9 Claims**



A siren system in which a sound producing transducer is coupled to a basic oscillating circuit through a push-pull amplifier and a semiconductor phase inverter. The basic oscillating circuit is modulated by a relaxation oscillator. A semi-conductor device, which acts as a variable resistance, is connected in a resistance-capacitance circuit of the basic oscillating circuit and is coupled to the relaxation oscillator.

3,810,170
ALARM SYSTEM
Roland F. Zinsmeister, 26 E. Park Rd., Pittsford, N.Y.
Filed Oct. 5, 1972, Ser. No. 295,241
Int. Cl. G08b *23/00, 17/00*
U.S. Cl. 340—420 **12 Claims**

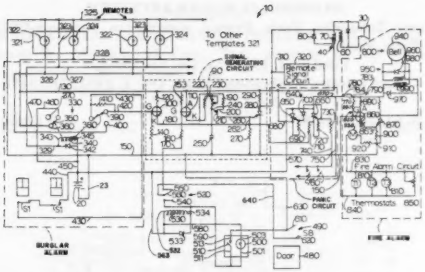


A visual signalling system which provides for visual signalling of deaf persons is described. The system is installed in the sleeping rooms, corridors, rest rooms, and other areas of a building which may be occupied by deaf persons. A signalling panel in each room contains a plurality of lights including a high intensity strobe lamp. Electrical control circuits for the lamps include an emergency and fire warning circuit and attention circuits. These circuits repeatedly operate the strobe lamp, and in the case of the fire and emergency circuits, override all other circuits to operate the strobe lamp. In addition, another of the lamps, which has a distinguishing color or other label, indicates the fire or emergency condition. Thus, through the use of the strobe lamps the attention of the deaf persons is obtained, and when these persons observe the other lamps, they are informed of the nature of the call, whether it be fire or other emergency condition, or visitors, or some other signalling condition.

3,810,171
COMBINATION BURGLAR ALARM AND FIRE ALARM SYSTEM

Howard C. Schubert, Leonia, N.J., assignor to Aerolite Electronics Corporation, Union City, N.J.

Filed Aug. 21, 1972, Ser. No. 282,245
Int. Cl. G08b 23/00
U.S. Cl. 340—420 11 Claims

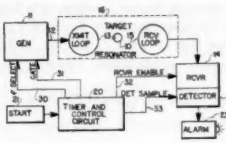


The system includes fire alarm and burglar alarm portions and a common power supply therefor. The burglar alarm portion includes (1) alarm sensors and an alarm circuit for generating signals in response to the operation thereof; (2) a "panic" portion, operable by an individual anywhere in the premises protected, and connected to the alarm circuit and operable thereby whether power is directly connected thereto or not; and (3) status lights and power switch combinations dispersed throughout the premises to display the status of the system. The fire alarm portion includes sensors dispersed throughout the premises and an alarm signal generating circuit.

3,810,172
DETECTION SYSTEM

Lee E. Burpee, 77 N. Castle Cir., and Donald A. Paynter, 5944 Via Lemora, both of Goleta, Calif.

Filed July 18, 1972, Ser. No. 272,831
Int. Cl. G01s 9/02
U.S. Cl. 343—5 PD 13 Claims



A system for detecting the presence of resonant circuit targets in a field of electromagnetic radiation. The system includes means for generating a burst of a predetermined single frequency and a detector enabled after the termination of transmission. The detector is sensitive to continued presence of the predetermined frequency indicative of resonant ringing of a target in the field. Time sharing of a common transmitter and detector is accomplished employing a time division multiplex arrangement.

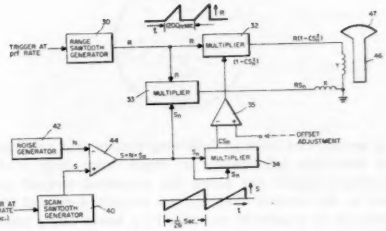
Counterfeit target detection is also accomplished employing a test fixture with valid and invalid target indicators controlled by the system.

In one embodiment, the antenna means is positioned in obstructions or doors which are moved aside by a person passing through the portal. This provides close coupling of energy and the system is provided with an enabling switch operated by displacement of the obstruction or door.

3,810,173
PPI DISPLAY SYSTEM WITH DEFLECTION MODULATION TO REDUCE SPOKING

George M. Kirkpatrick, North Syracuse, N.Y., assignor to Syracuse University Research Corporation, Syracuse, N.Y.

Filed Nov. 30, 1972, Ser. No. 310,682
Int. Cl. G01s 7/12
U.S. Cl. 343—5 R 13 Claims

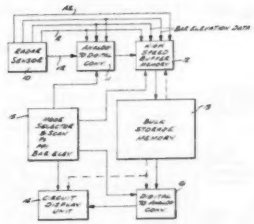


A PPI display system representing slant range and azimuth angle corresponding to a given number of beam positions, having a noise source modulation circuit for modulating the scanning signal to cause random lateral deflection, and a long persistence display tube for providing video integration of such random deflections to reduce display spoking and provide a uniform PPI appearance.

3,810,174
DIGITAL SCAN CONVERTER

James L. Heard; William C. Hoffman, both of Torrance, and Eugene W. Opittek, Tustin, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 28, 1969, Ser. No. 880,630
Int. Cl. G01s 7/44, 9/02
U.S. Cl. 343—5 DP 28 Claims

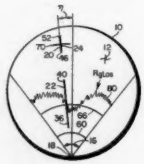


A digital system is disclosed for conversion of data rates inherent in various scanning patterns to different rates for display. A buffer memory is employed to accumulate blocks of data pertaining to successive scanning lines in a rectilinear or polar coordinate scanning pattern. The data is transferred in blocks to a bulk storage memory from which it is read cyclically for display. Different scanning and display patterns are accommodated through mode control switches. In multi-bar-elevation radar scanning modes, detection of targets is augmented by storing for simultaneous display a plurality of past frame histories or by storing an intensity value in binary code for a target return and decreasing it in uniform steps during successive scanning cycles during which a target return is not received from the same range element until it reaches a level of zero.

3,810,175
ALONG TRACK TERRAIN AVOIDANCE CONTOURING SYSTEM

William H. Bell, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 17, 1972, Ser. No. 218,217
Int. Cl. G01s 9/06, 9/52
U.S. Cl. 343—7 TA 4 Claims

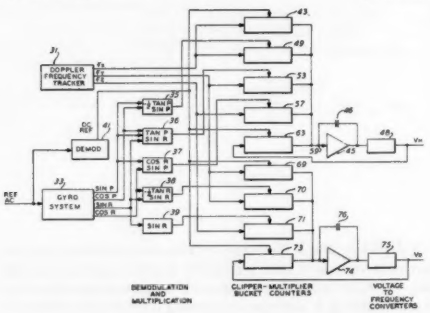


A terrain clearance or following system that provides terrain clearance information in depth from large elevation depression angles out along the projected aircraft ground track to the horizon. The aircraft projected ground track is displayed on a cathode ray tube by a heavy along track line and the intersection of the aircraft velocity vector with the terrain is displayed by the intersection of the along track line and a flight path reference line. The range to the top of a first hill is displayed at the end of a first segment of the along track line and the distance across the valley between first and second hills is displayed as a blank space between the first and a second segment of the along track line. The range to the top of succeeding hills is displayed by additional segments of the along track line. This system operates with simultaneous display of a radar line of sight range line and a terrain clearance reference line representing an imaginary clearance plane at a selected distance below the aircraft. A down look reference line representing the range to the clearance plane at the maximum depression angle may also be displayed.

3,810,176
ROLL AND PITCH CORRECTION FOR A FIXED-ANTENNA DOPPLER SYSTEM

John Gray, Guilford, Conn., assignor to The Singer Company, Little Falls, N.J.

Filed Dec. 18, 1972, Ser. No. 316,104
Int. Cl. G01s 9/48
U.S. Cl. 343—8 22 Claims

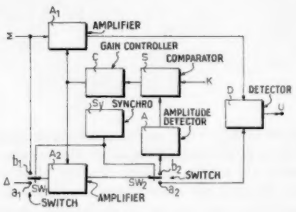


Apparatus to correct the signals obtained from a fixed antenna doppler navigation system, which will be in terms of body axes velocities, to take into account the pitch and roll of the aircraft in which the system is installed to thereby provide corrected signals representing ground velocity components is shown. The equations expressing the transformation from body axis velocities to ground velocities are solved using a plurality of clipper-multiplier bucket counter units to perform the required multiplications of the aircraft body axes components, expressed as frequencies, by functions of pitch and roll expressed as DC voltages to obtain the terms in the equations. The DC voltages proportional to functions of pitch and roll are obtained by demodulating 400 HZ sine and cosine signals available in the aircraft. Also shown is a multiplying demodulator and sampling multiplying dividing apparatus used in simplifying the computations of the pitch and roll functions used in the equations.

3,810,177
MONOPULSE RADAR RECEIVER

Remy Tabourier, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Sept. 29, 1972, Ser. No. 293,539
Claims priority, application France, Oct. 1, 1971, 71.35478
Int. Cl. G01s 9/22
U.S. Cl. 343—16 M 7 Claims

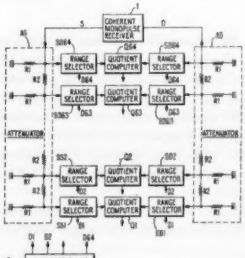


The present invention relates to the receivers used in multibeam, recurrent pulse ranging systems. In accordance with the invention, in a receiver comprising two variable-gain amplifiers, one of which is for the sum signal Σ and the other for the difference signal Δ, it is arranged that with one recurrence among a plurality thereof, the sum signal is supplied to the difference amplifier and the gain control device AGC is then supplied with the sum signal from the output of that amplifier. The synchronous demodulator D supplies the signal $K \cdot \Delta/\Sigma$ independent of the respective gains of the sum and difference amplifiers K being the reference AGC value.

3,810,178
RANGE-CONTROLLED VARIABLE GAIN DEVICE FOR PULSE RADAR RECEIVER

Robert Basard, Meudon, and Michel R. J. Dalbera, Chatillon sur Bagneux, both of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 29, 1972, Ser. No. 310,244
Claims priority, application France, Nov. 29, 1971, 71.42640
Int. Cl. G01s 9/22, 7/34
U.S. Cl. 343—16 M 7 Claims



A coherent monopulse radar receiving system with discrete-step sensitivity-time control. The video signals of each channel

(sum and difference) are fed to separate ladder attenuators each having n sections or stages. The n outputs of those attenuators provide the inputs to the range selectors of the system which are also separate for sum and difference channels. The result is a step-like attenuation curve approximating the theoretical curve ($1/r^4$). A variation shown involves grouping of range selectors to obtain broader approximation. In either embodiment the equality of sum and difference channel gains is maintained to a high degree of accuracy.

3,810,179

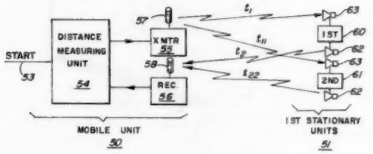
RADAR TRILATERALIZATION POSITION LOCATORS

James W. Merrick, El Paso, Tex., assignor to Del Norte Technology, Inc., El Paso, Tex.

Filed Nov. 4, 1971, Ser. No. 195,687

Int. Cl. G01s 9/56

U.S. Cl. 343—6.5 LC **10 Claims**



A radar position locator system uses a mobile and at least two stationary transceivers. The stationary transceivers function somewhat as a surveyor's bench mark system where a transceiver at each end serves to locate the ends of a previously surveyed line; this line then becomes a survey baseline. Each transceiver is individually identified by a coded stream of radar pulses, as, for example, a stream of pulses transmitted at a predetermined transceiver identifying pulse repetition rate. A selected number of validated radar signals are transmitted between the mobile and stationary transceivers. The round trip transmission times of several of these signals are averaged, and a digital read out indicates the distance represented by such averaging.

3,810,180

MOTOR VEHICLE WINDSHIELD WITH INCORPORATED ANTENNA

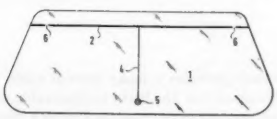
Heinz Kunert, Cologne; Heinz Moebs, Herzogenrath, and Gerd Sauer, Broichweiden, all of Germany, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed May 14, 1971, Ser. No. 143,558

Claims priority, application Germany, May 15, 1970, 2023823

Int. Cl. H01q 1/32

U.S. Cl. 343—713 **1 Claim**



A window or the like, such as the windshield of an automotive vehicle, comprising electrically conductive lines constituting an antenna for receiving electric waves from space.

3,810,181

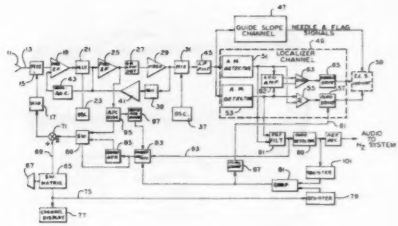
LOW COST GUIDANCE RECEIVER

Peter R. Tierney, Briar Cliff Manor; Arthur F. Lohman, Pleasantville, and Donald M. Andrus, Lincolndale, all of N.Y., assignors to The Singer Company, Little Falls, N.J.

Filed Jan. 2, 1973, Ser. No. 320,376

Int. Cl. G01s 1/16

U.S. Cl. 343—108 R **18 Claims**



A low cost airborne set for a microwave landing system in which a voltage controlled oscillator only accurate to within two channels is used for tuning. The oscillator, after selection of a desired channel on the control panel is scanned by a ramp voltage and, upon receiving a proper microwave signal, an AFC loop closed to hold the signal. The beams of the transmitter are switched at a variable rate to transmit a Morse Code identifying number which is decoded upon receipt and compared with the selected channel number. If a comparison results, the AFC remains in and the instruments are enabled. If the wrong station is being received, the AFC is removed and scanning resumed until the next signal is received and the process repeated until the proper channel is obtained.

3,810,182

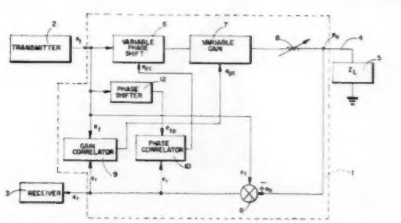
ADAPTIVE ELECTRONIC HYBRID TRANSFORMER

Stanley A. White, Yorba Linda, and Hubert L. Raper, Fullerton, both of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed Aug. 12, 1971, Ser. No. 171,082

Int. Cl. H04l 5/00

U.S. Cl. 343—180 **9 Claims**



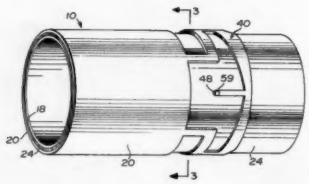
The circuit is interposed between the transmitter and the receiver at one end of the transmission channel and correlates signals in a transmission channel with signals from the transmitter to adjust the gain and phase shift of the signal from the transmitter until the signal component in the transmission channel from the transmitter is filtered from the transmission channel signal so that only the receiver signal component is passed into the receiver.

3,810,183

DUAL SLOT ANTENNA DEVICE

Jack K. Krutsinger; Cari N. Bullai, and Robert E. Munson, all of Boulder, Colo., assignors to Ball Brothers Research Corporation, Boulder, Calif.

Filed Dec. 18, 1970, Ser. No. 99,481
Int. Cl. H01q 13/10
U.S. Cl. 343—708 4 Claims



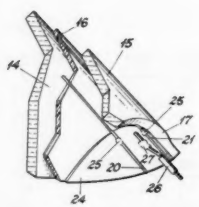
A dual slot antenna assembly is disclosed herein and generally includes a pair of concentrically positioned and radially spaced cylindrical conductors defining a pair of circumferential slots which are longitudinally spaced one-half wavelength apart at the anticipated operating frequency of the antenna device. An electrical signal feed assembly is connected with the conductors for exciting the slots so as to provide overlaping radiation patterns emanating in the same direction.

3,810,184

LAMINATED WINDSHIELD WITH BUILT-IN ANTENNA

James H. Boicey; Paul T. Mattimore, and Otto J. Schmoeger, Jr., all of Toledo, Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Continuation of Ser. No. 814,896, April 10, 1969, abandoned.
This application Feb. 17, 1972, Ser. No. 227,641
Int. Cl. H01g 1/32
U.S. Cl. 343—713 7 Claims



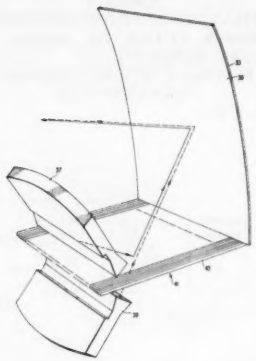
An automobile windshield of laminated glass having an indentation in the lower edge of one of the glass sheets, an antenna carried by the plastic interlayer and made up of fine wire elements that include horizontally extending elements and vertical elements that extend from the horizontal elements toward the bottom of the windshield, and a tinned metal plate also carried by the interlayer in alignment with the indentation in the glass sheet for connecting the antenna to the car radio.

3,810,185

DUAL POLARIZED CYLINDRICAL REFLECTOR ANTENNA SYSTEM

Ernest J. Wilkinson, Sudbury, Mass., assignor to Communications Satellite Corporation, Washington, D.C.

Filed May 26, 1972, Ser. No. 257,094
Int. Cl. H01s 19/00
U.S. Cl. 343—756 16 Claims



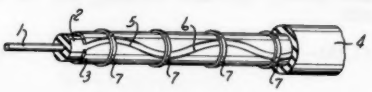
A dual polarization antenna system comprising a cylindrical reflector having a parabolic cross section. The cylindrical reflector simultaneously collimates energy directed from a vertically polarized and a horizontally polarized line source, both of which are offset from the cylindrical reflector to avoid aperture blockage. A folded pill box may be used for each of the line sources.

3,810,186

LEAKY COAXIAL CABLE

Tsuneo Nakahara, Nishinomiya; Noritaka Kurauchi, Suita, and Tachiro Nagao, Osaka, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 701,983, Jan. 31, 1968, abandoned.
This application Feb. 17, 1971, Ser. No. 116,245
Int. Cl. H01q 13/10
U.S. Cl. 343—771 8 Claims



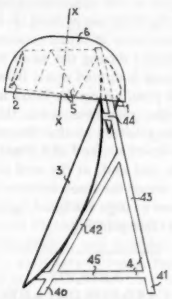
This invention provides a leaky coaxial cable suitable for vehicle communication. The leaky coaxial cable of this invention has on the surface of its outer conductor a number of slots which are positioned zigzag at a cycle approaching λg/2 (λg: guide wave-length of the coaxial cable) and leaks a part of the electromagnetic energy propagating in the coaxial cable in the form a vertical polarized wave through the slots.

This invention further provides a method of manufacturing such a leaky coaxial cable and a vehicle communication system using such a leaky coaxial cable.

3,810,187
CAPPED ANTENNA OF THE OFFSET CASSEGRAINIAN TYPE

Nhu Bui Hai, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Apr. 18, 1973, Ser. No. 352,332
Claims priority, application France, Apr. 21, 1972, 72.14251
Int. Cl. H01q 19/14
U.S. Cl. 343—781 4 Claims

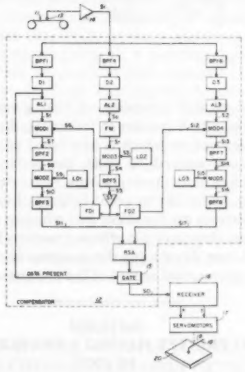


In this antenna, the auxiliary reflector and the aperture of the primary source are located above the main reflector. A cap having a metal layer and an inner absorbent layer covers and surrounds the aperture of the primary source and the whole of the auxiliary reflector. In addition to its radioelectric function, the cap thus also plays the part of a radome.

3,810,188
FREQUENCY DEVIATION COMPENSATION SYSTEM

T. A. O. Gross, Lincoln, and Stewart W. Wilson, Concord, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 2, 1972, Ser. No. 294,316
Int. Cl. G11b 31/00
U.S. Cl. 346—33 MC 19 Claims

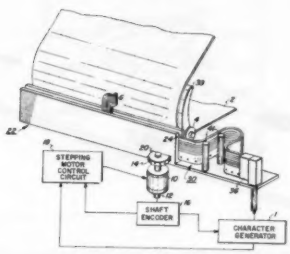


A compensation system for reducing the effects of frequency deviations, produced by wow and flutter, for example, in recorded signals. The information signals are recorded together with a signal at a pilot frequency. In reproduction, signals derived from the information and pilot signals are cross-modulated to substantially diminish the frequency deviations experienced as a result of relative differences in recording and playback speeds.

3,810,189
PRINTING APPARATUS EMPLOYING STEPPING MOTOR CONTROL SYSTEM

John H. Casperson, and George N. Tsilibes, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed July 3, 1972, Ser. No. 268,354
Int. Cl. G01d 15/06
U.S. Cl. 346—74 ES 9 Claims

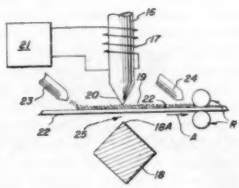


A stepping motor control system for controlling the bi-directional movement of a plurality of styli across a recording medium. The control system includes a feedback path for energizing selected styli at predetermined intervals whereby substantially distortion free characters are printed on the recording medium. The styli, in a preferred embodiment, are etched on a strip of insulating material and driven by the stepping motor within a slotted support member.

3,810,190
MAGNETIC THROUGH-FIELD APPARATUS AND PROCESS FOR PRINTING BY IMBEDDING PARTICLES IN A RECORD MEDIUM

Alfred F. Leatherman, Columbus, Ohio, assignor to William C. Heller, Jr., Milwaukee, Wis.

Continuation-in-part of Ser. No. 67,810, Aug. 28, 1970, abandoned, and a continuation-in-part of Ser. No. 506,960, Nov. 9, 1965, Pat. No. 3,526,708. This application Feb. 4, 1972, Ser. No. 223,534
Int. Cl. G01d 15/12
U.S. Cl. 346—74 MP 26 Claims

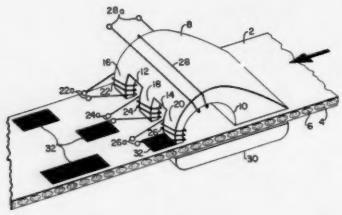


A printing method and apparatus employs a high frequency magnetic through-field of high strength for effecting lodging of magnetic particles on a record medium. The control or shape determining field pole is located on the same side of the record medium as the toner.

3,810,191
MULTI-STYLUS THROUGH FIELD RECORDING HEAD

Norman L. Stauffer, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 26, 1972, Ser. No. 300,961
Int. Cl. G11b *5/22*; **G01d** *15/12*
U.S. Cl. 346—74 MC **5 Claims**

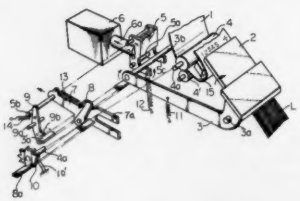


A magnetic recording head for recording on a magnetically responsive recording medium is arranged to incorporate a core structure of high magnetic retentivity material with individual core members being magnetized by a respective winding to produce a magnetic flux through the magnetically responsive recording medium. A flux return path is arranged to distribute the magnetic flux in the return path to a flux density level which is ineffective to produce a recording on a recording medium and is arranged to provide a flux return path on the other side of the recording medium from the magnetic recording head. A common bias and reset winding is arranged on the core structure and is separately energized to normally bias the core structure to a magnetic state which is ineffective to produce a recording on the recording medium during the absence of a signal on the individual windings on the core members and to reset the core structure to a non-recording state after the core members have been placed in a recording state by a signal applied to the respective windings on the core members.

3,810,192
THERMOSENSITIVE LINE PRINTER

Katsuhiko Okabe, Tokorozawa, Japan, assignor to Kabushikikaisha Copal, Tokyo, Japan

Filed June 21, 1973, Ser. No. 372,109
Claims priority, application Japan, June 29, 1972, 47-76883
Int. Cl. G01d *15/24*
U.S. Cl. 346—79 **4 Claims**

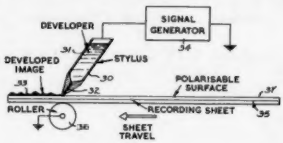


The thermosensitive line printer has a printing head provided with a thermally activated dot-matrix capable of printing a line of letters on a thermosensitive recording sheet upon receipt of a signal from the printer, a head receiving pad and a sheet feeding mechanism provided with a ratchet. In order to operate in succession the printing head for moving the same toward the pad for the printing operation and moving away from the pad for feeding the sheet and the sheet feeding mechanism for feeding the sheet intermittently while the printing head is held apart from the pad, a single electromagnet is operatively connected to a driving lever for reciprocal movement thereof each time the electromagnet is energized which lever is in turn operatively connected to a head supporting lever, a ratchet driving lever and a hook lever so that, upon application of a signal to the electromagnet, the driving lever is actuated to drive the head supporting lever, the ratchet driving lever and the hook lever in timed relation so that the printing operation is effected during the head is urged against the pad and, after the head is moved apart from the pad and temporarily held in that position by the hook lever, and, after the deenergization of the electromagnet, the driving lever is returned to its initial position so that the ratchet is driven by the ratchet driving lever to feed the sheet while the head is held apart from the pad and, at the end of the return movement of the driving lever, the hook lever is released to free the head supporting lever to urge the head against the pad so as to be ready for the next line printing.

3,810,193
BITTING CARD FOR DATA RECORDING

Kenneth A. Metcalfe, and Ian E. Smith, both of Lockleys, Australia, assignors to The Commonwealth of Australia, c/o The Secretary, Department of Supply, Canberra, Australia

Filed Sept. 30, 1969, Ser. No. 862,417
Claims priority, application Australia, Sept. 30, 1968, 44093/68
Int. Cl. B41m *5/20*; **B44d** *1/18*; **G03g** *13/10*
U.S. Cl. 346—74 ES **1 Claim**



A method of data recording on bitting cards or sheets or other material which consists in traversing the material with a recording element on which is impressed an electrical signal which does not exceed 70 volts, the surface on which the recording takes place having a bulk resistivity not exceeding 10^{16} ohm cm.^{2} whereby to avoid holding of unwanted electrical characteristics on the sheet and whereby recording takes place without corona or gas effects present when high voltage is used, and then developing the resultant image to produce a permanent recoverable record of the impressed signal.

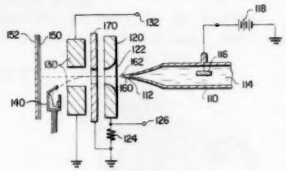
3,810,194
LIQUID JET PRINTER HAVING A DROPLET DETECTING DEVICE

Kazuyoshi Tokunaga; Takahiro Yamada, both of Hitachi; Tetuo Doi, Tokyo, and Tetsuo Takahashi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed June 25, 1973, Ser. No. 372,902
Claims priority, application Japan, June 23, 1972, 47-62365
Int. Cl. G01d *15/18*
U.S. Cl. 346—75 **12 Claims**

An ink jet printer includes a device for generating a pulse in response to a droplet formation or movement, in order to

synchronize the operation of a deflection means or a pattern generating means of the ink jet printer with the pulse from the droplet detecting means. The ink droplet detecting means has an electro-conductive plate, which can be used as an ac-



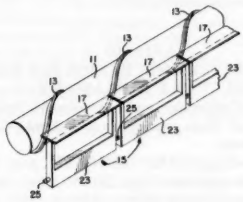
celerating electrode, and a resistor through which the electro-conductive plate is connected to a voltage supply for applying a voltage between the ink to be issued out and the electro-conductive plate.

3,810,195

HELICAL BAR PRINTER LOGIC CIRCUITRY

Henry P. Kilroy, Smithtown, and Harold J. Murphy, Centerport, both of N.Y., assignors to Potter Instrument Company, Inc., Plainview, N.Y.

Continuation of Ser. No. 39,404, May 21, 1970, abandoned.
This application Aug. 28, 1972, Ser. No. 284,274
Int. Cl. G01d 9/42
U.S. Cl. 346—101 **8 Claims**



In a printer which selectively prints in response to binary coded input character signals, a plurality of rigidly supported, lightweight blades repeatedly strike a continuously rotating helical bar, printing dot patterns. A movable, lightweight coil fixed to each blade respectively and disposed in a magnetic field drives the blade. Logic circuits, which control the hammers to print alphanumeric characters, include a read only memory which stores binary signal sets representing dot patterns to be printed in rows to compose alphanumeric characters. In response to the received binary characters, addresses in the read only memory are selected to compose the corresponding alphanumeric characters. The binary signal sets at the selected addresses are read out to shift registers, one corresponding to each hammer. The signals in the shift register are read serially out of the shift registers and control actuation of the corresponding hammers as they are read out.

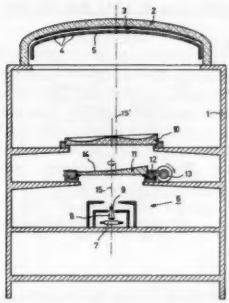
3,810,196

EXPOSURE DEVICE FOR MANUFACTURING A DISPLAY SCREEN OF A COLOUR TELEVISION PICTURE TUBE, COMPRISING A ROTATING LENS

Piet Gerard Joseph Barten, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 25, 1972, Ser. No. 247,280
Claims priority, application Netherlands, May 14, 1971, 7106619
Int. Cl. G03b 27/00
U.S. Cl. 95—1 R **4 Claims**

An exposure device for display screens having either a rotationally symmetric lens, a plane parallel plate or a prismatic plate that rotates during the exposure operation of the device



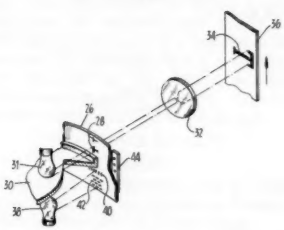
to provide exposed dots on the screen that are of smaller dimensions than the apertures in the mask employed.

3,810,197

METHOD AND SYSTEM FOR INTER-CHARACTER SPACE MODIFICATION TO ADJUST THE LENGTH OF A LINE OF COPY TO FIT AN ALLOTTED LINE LENGTH

John G. Piccone, Pleasanton, Calif., assignor to The Singer Company, New York, N.Y.

Filed June 2, 1972, Ser. No. 259,163
Int. Cl. B41b 21/36
U.S. Cl. 95—4.5 **8 Claims**

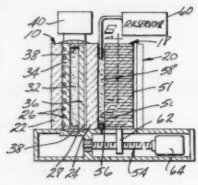


A method and system particularly adapted for use by phototypesetting machines for adjusting the length of a line of copy to fit a line length allotted for such copy by changing intercharacter spacing of the words in the copy. This fine control of copy line length is provided by changing intercharacter spacing of the words of the copy when a coarse control has been provided by the approximate harmony of the point size of the characters to be used, the allotted line length, and the line length of the copy. Initially, the length of the line of copy is determined with normal inter-character and inter-word spacing without setting the copy. Then the difference between this length and the allotted line length is converted into the amount of linear distance which is to be added to each character or to be subtracted from each character space in the line of copy. The line of copy is then set on a photosensitive medium by the phototypesetter with constant predetermined linear distance subtracted or added to each character space of the line of copy so as to precisely adjust the length of the copy line to fit the allotted line length. A particular font arrangement is utilized in the system to generate data related to the linear space allotted for each character in the line of copy.

3,810,198
DATA PRINTER

Harold E. Camp, Toledo, Ohio, and John D. Grier, Bridgeton, N.J., assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 574, Jan. 5, 1970, Pat. No. 3,749,487. This application Apr. 9, 1973, Ser. No. 349,025
Int. Cl. B41b 21/14
U.S. Cl. 95—4.5 2 Claims

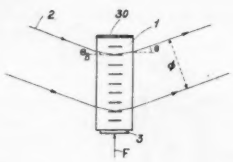


A visual data handling system incorporating a visual display device to provide an illuminated display of data. A print-through device utilizing a matrix of light conducting elements transfers the illuminated display of data to a light responsive type printer. This illumination transfer can be selectively interrupted by a turn-off mechanism, which does this by maneuvering the print-through device. Also, the light conducting elements can incorporate lasing devices to intensify the illumination.

3,810,199
HIGH SPEED OPTICAL PRINTER

Roger J. Torguet, Paris, France, assignor to Thomson-CSF, Paris, France

Continuation of Ser. No. 129,343, March 30, 1971, abandoned. This application Nov. 20, 1972, Ser. No. 307,831
Claims priority, application France, Apr. 1, 1970, 70.11705
Int. Cl. B41b 21/26
U.S. Cl. 95—4.5 7 Claims



The invention relates to optical printers for printing onto a photosensitive substrate a succession of characters arranged in parallel lines.

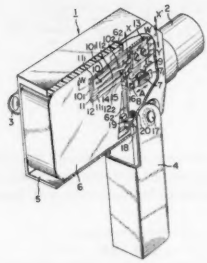
The optical printer according to the invention comprises a matrix of radiant energy sources capable of forming planar patterns representative of the characters to be printed; the pencils of radiant energy emerging from the matrix are transmitted toward the substrate across an afocal optical system wherein an acousto optical deviator element is positioned.

3,810,200
PHOTOGRAPHIC CAMERA HAVING AN AUTOMATIC EXPOSURE ELEMENT SETTING DEVICE

Keiichi Sakaguchi, and Noritsugu Hirata, both of Yokohama, Japan, assignors to Cannon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 16, 1972, Ser. No. 307,040
Int. Cl. G01j 1/04; G03b 17/26
U.S. Cl. 95—31 FS 11 Claims

A camera loadable with a notched magazine is provided with a loading chamber including a pair of opposed side walls. A plurality of mutually insulated, substantially parallel sensing electrodes are mounted on one of the side walls. The sensing electrodes are biased transversely toward the other side wall for contacting the notched surface of the magazine when the latter is loaded into the chamber, thereby completing a selected switching path to the exposure control circuit of the

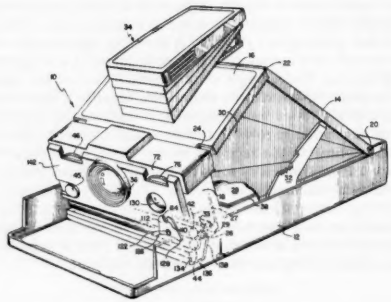


camera in accordance with the film sensitivity coded into the notch geometry. The cumulative transverse biasing force applied to the notched wall of the magazine by all of the sensing electrodes retains the camera in operating position against the opposite chamber wall at the same time that the sensing electrode selected by the notch geometry completes the required path to the exposure control circuit.

3,810,201
AUTOMATIC RETURN MECHANISM FOR MANUALLY ADJUSTABLE TRIM ASSEMBLY

Edwin H. Land, Cambridge, and Lawrence M. Douglas, South Easton, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 168,672, Aug. 3, 1971, abandoned. This application Apr. 24, 1972, Ser. No. 246,851
Int. Cl. G03b 19/02, 17/04, 17/18
U.S. Cl. 95—10 C 38 Claims

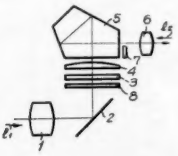


An automatic return mechanism for a manually adjustable trim assembly is provided for use in conjunction with a camera having an automatic exposure control system. In the preferred embodiment of the present invention, the camera is foldable and includes a number of housing members interconnected for mutual movement between an erected configuration and a folded configuration for convenient carrying and storage. The automatic return mechanism is disposed within one of the housing members and operates in response to return of the camera into its folded configuration.

3,810,202
LIGHT-MEASURING METHOD AND STRUCTURE FOR CAMERAS

Naoyuki Uno, Kawagoe-shi, and Tadazumi Sakazaki, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Nov. 27, 1972, Ser. No. 309,779
Claims priority, application Japan, Dec. 1, 1971, 46-97499
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CT **11 Claims**

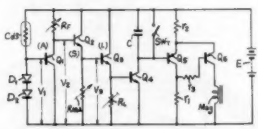


A method and structure for measuring the light travelling through the objective of a single lens reflex camera. A photosensitive unit is situated adjacent a viewfinder of the camera for receiving not only light which travels along a first path through the objective of the camera but also light which travels along a second path through the eyepiece of the viewfinder. The light which travels along one of these paths is treated by being subjected to the action of a light-chopper, so that the photosensitive unit provides an AC signal from the chopped light and a DC signal from the light which is not chopped. These two signals are superimposed and the superimposed signals are subjected to the action of a suitable filter which extracts from the superimposed signals only the light travelling through the objective. Also, it is possible for the AC signal to be rectified and then to achieve the signal corresponding to the light travelling through the objective by subjecting the rectified AC signal and the remaining DC signal to the action of a differential amplifier.

3,810,203
ELECTRICAL CONTROLS FOR CAMERA SHUTTERS

Chiharu Mori, 1, Oyama-cho, Itabashi-ku, Tokyo-to; Katsumi Ota, 8-14, Kamifukuoka 3-chome, Fukuka-machi, Iruma-gun, Saitama-ken, and Hideaki Togawa, 12-21, Yayoi-cho, 4-chome, Nakano-ku, Tokyo-to, all of Japan

Continuation-in-part of Ser. No. 117,000, Feb. 19, 1971, abandoned. This application Nov. 24, 1972, Ser. No. 309,095
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CT **8 Claims**

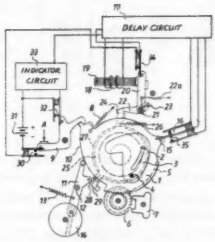


An electrical system for controlling the operation of a camera shutter. The system includes a shutter-operating circuit section controlled directly from a logarithmic expansion circuit section. A logarithmic compression circuit section is provided for receiving light from the object which is to be photographed and for providing a given output. An emitter-follower circuit section is electrically connected between the logarithmic-compression circuit section and the logarithmic-expansion circuit section to receive the output from the former and to perform certain computations determining the input to the latter. A variable resistor means is operatively connected as a load resistance to the emitter-follower circuit section in order introduce into the computations exposure-determing factors in addition to the light at the object. This variable resistor means has a resistance value which changes in accordance with an index function according to the additive APEX system in relation to given conditions such as the diaphragm setting or film speed.

3,810,204
PHOTOGRAPHIC CAMERA WITH AUTOMATIC EXPOSURE CONTROL ARRANGEMENT

Peter Lermann, Narring, and Helmut Durr, Munich, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 21, 1972, Ser. No. 308,329
Claims priority, application Germany, Nov. 29, 1971, 2159161
Int. Cl. G03b *9/62, 7/18*
U.S. Cl. 95—10 CE **21 Claims**

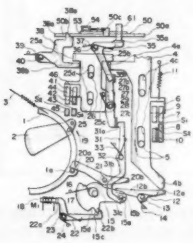


Upon pressing of the release button, the diaphragm of the camera is always moved from a fully closed to a fully opened position. The element positioning the diaphragm has a control side with a shape constituting an exposure-time curve. During the movement of the diaphragm, the shutter is opened at a time depending upon the available light. The closing of the shutter is controlled mechanically as a function of the instantaneous position of the diaphragm, that is in accordance with the curve on the side of the element positioning the diaphragm. The exposure time is longer for large diaphragm openings and shorter at small diaphragm openings.

3,810,205
FLASH CONTROL MECHANISM FOR A CAMERA

Toshinori Imura, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan

Filed Sept. 29, 1970, Ser. No. 76,392
Claims priority, application Japan, Oct. 3, 1969, 44-78610; June 2, 1970, 45-47844
Int. Cl. G03b *15/04, 7/08*
U.S. Cl. 95—11 R **7 Claims**



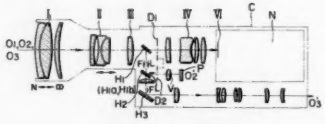
Flash control mechanism automatically switches the connections to elements in an exposure timing circuit in response

to the detection of object brightness and an electrically responsive mechanism restrains a release member controlling ignition of the flash unit and rotation of the flash indexing socket into an ignition position.

3,810,206
EXPOSURE CONTROL DEVICE

Keiichi Sakaguchi, Yokohama; Atsushi Someya, Tokyo, and Noritsugu Hirata, Yokohoma, all of Japan, assignors to Cann Kabushiki Kaisha, Tokyo, Japan

Filed May 30, 1972, Ser. No. 258,104
Claims priority, application Japan, June 1, 1971, 46-45557
Int. Cl. G03b *7/10, 7/20*
U.S. Cl. 95—10 PO **33 Claims**

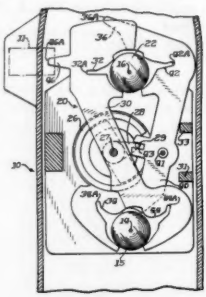


An exposure control device for cameras or the like is provided with means for controlling the exposure light beam incident through an phototaking optical system, means for controlling the photometric light beam incident upon a photoelectric cell and means for controlling the photometric field. The exposure and photometric light beam control means are so located that the optical paths to the variable stops thereof are different in length from each other. The photometric field control means is actuated in response to at least one of the exposure factors, that is the brightness of a subject or field of view, the focal length control of the exposure optical system, and the focusing control of the phototaking optical system in response to a distance from the phototaking optical system to said subject so that the light beam incident upon the photometric light beam control means may be so controlled as to automatically vary the photometric field.

3,810,207
EXPOSURE CONTROL SYSTEM

Arthur C. Mueller, Niles, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Apr. 24, 1972, Ser. No. 246,757
Int. Cl. G03b *9/02, 9/06, 17/20*
U.S. Cl. 95—64 R **7 Claims**

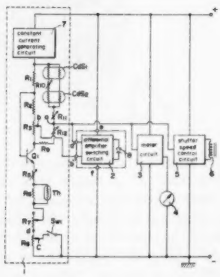


A system for controlling and indicating the exposure condition of film in a camera. The system includes indicia means signaling the existance of an under-exposed or over-exposed condition and iris blade means and aperture control means which cooperate to expose the film in the camera during said underexposed or over-exposed conditions.

3,810,208
PHOTOGRAPHIC CAMERA SCENE BRIGHTNESS INDICATOR

Yasuhiro Nanba, and Masayoshi Sahara, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed July 2, 1973, Ser. No. 375,772
Claims priority, application Japan, June 30, 1972, 47-65047
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CT **9 Claims**

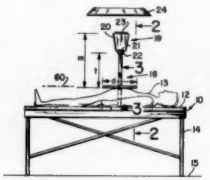


In a photographic camera wherein a shutter is controlled or a shutter speed is indicated by output signals generated according to a quantity of scene light received by light receptive elements and a film sensitivity setting, and, in addition thereto if necessary, a diaphragm aperture setting, an electric circuit is responsive only to signals relating to the scene brightness for indicating whether the scene brightness is lower or higher than a predetermined critical level.

3,810,209
CAMERA POSITIONING APPARATUS

Gerhard I. W. Bahnsen, Box 1297, South Lake Tahoe, Calif.

Filed Oct. 30, 1972, Ser. No. 302,047
Claims priority, application Japan, Oct. 21, 1971, 46-83483
Int. Cl. G03b *17/56*
U.S. Cl. 95—86 **8 Claims**

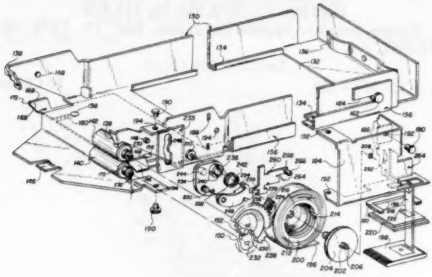


Apparatus including a camera preferably having a fixed focus lens adapted to be directed toward an object to be photographed, with the camera carrying a structure which projects generally toward the object and mounts a focus indicator for indicating to a user the location of a predetermined plane in which a photographic object may be positioned for proper focusing of its image on the camera film. A positioning unit projects beyond the focus indicator for engagement with a support, and is adjustable to vary the spacing of the focus indicator from the support.

3,810,210
FILM UNIT PROCESSING MECHANISM

Henry S. Adamski, Webster, and Guilford E. Kindig, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 5, 1972, Ser. No. 268,948
Int. Cl. G03b *17/50*
U.S. Cl. 354—86 **2 Claims**

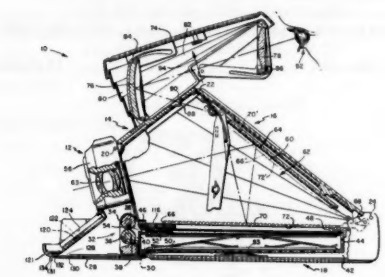


A camera adapted to use a film cartridge containing a plurality of film units that are successively exposable and then processable by being transported through a nip between a pair of juxtaposed pressure members is provided with an improved mechanism, preferably operated by a lanyard, for transporting each film unit from the cartridge into and through the nip to initiate processing of the unit, to separate the image-recording portion of the unit from waste elements thereof, and to return the waste elements to the cartridge; the mechanism has no exposure and double-exposure prevention capability and coordinates the various functions performed.

3,810,211
SELF-DEVELOPING CAMERA SYSTEM

Richard R. Wareham, Marblehead, and Richard Paglia, Carlisle, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 24, 1972, Ser. No. 246,703
Int. Cl. G03b *17/50*
U.S. Cl. 354—86 **13 Claims**

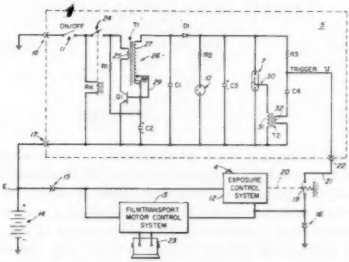


A compact collapsible self-developing camera system having a lens-shutter housing which is displaced from a storage position into an operative positive when the camera is rearranged from its collapsed into its extended condition. A film exit arrangement is offset with respect to the path the film normally assumes in leaving a pair of fluid spreading rollers and a light shielding plate is operative intermediate the rollers and the exit opening to deflect the film towards that exit arrangement. When operative, the light shielding plate further serves to reduce the amount of ambient light which would otherwise be incident upon processed sections of the film and to cooperate with an arrangement on the opposite side of the rollers therefrom to control the movement of a mass of processing fluid across exposed sections of the film unit. The lens-shutter housing displaces the light shielding plate from its operative position when the camera is collapsed so as to then occupy the space which the light shielding plate had occupied when in its operative position.

3,810,212
PREFERENTIAL POWER DISTRIBUTION SYSTEM FOR BATTERY POWERED CAMERA HAVING ELECTRONIC FLASH UNIT

Conrad H. Biber, Needham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 2, 1973, Ser. No. 320,602
Int. Cl. G03b *15/05*
U.S. Cl. 354—128 **15 Claims**

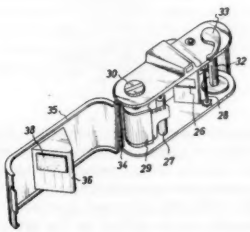


A preferential power distribution system for a battery powered camera having an electronic exposure control system, a film transport motor, and an electronic flash unit, in which recharging of the flash unit is controlled by a circuit which responds to the voltage of the battery to inhibit recharging when the battery voltage is low.

3,810,213
SYSTEM FOR TAKING STEREOPHOTOGRAPHS AND STEREOCAMERA BASED THEREON

Hideto Furuoka, Tokyo, Japan, assignor to Gakken Co., Ltd., Tokyo, Japan

Filed Mar. 14, 1972, Ser. No. 234,603
Claims priority, application Japan, Mar. 16, 1971, 46-14087
Int. Cl. G03b *35/08*
U.S. Cl. 354—115 **1 Claim**



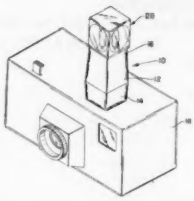
For photographically recording a pair of laterally displaced images of an object or scene on a film for three-dimensional observation in a stereoscope, a pair of optical systems are provided for optically transmitting the images to their predetermined positions on the film. Each of the optical systems includes a lens and a reflector so arranged that the images are

recorded upside down but unreversed as to their rights and lefts. In a stereocamera based on this system, a strip of film is advanced through a predetermined path of travel for recording successive pairs of such laterally displaced images.

3,810,214
FLASH EXTENDER

Harold L. Malone, East Rochester, and Robert J. Bodensteiner, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 24, 1972, Ser. No. 237,837
Int. Cl. G03b *15/04*
U.S. Cl. 354—148 **11 Claims**

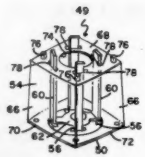


A flash extender, for a photographic camera adapted to receive and actuate a percussively ignitable flashlamp, having a socket, at least one push rod and a base. Insertion of the extender base into the camera flash socket aligns a push rod with the camera flash firing mechanism. Operation of the shutter release mechanism of the camera actuates the camera flash firing mechanism which causes the aligned push rod to be urged upwardly, thereby actuating a percussively ignitable flashlamp held in the socket of the flash extender. In a preferred embodiment, operation of the camera flash indexing mechanism causes rotation of the camera flash socket and the extender therewith to place a fresh flashlamp in firing position.

3,810,215
PERCUSSIVE FLASH EXTENDER

Donald E. Armstrong, c/o GTE Sylvania Incorporated, 1050 E. Broad St., Montoursville, Pa.

Filed June 18, 1973, Ser. No. 370,974
Int. Cl. G03b *19/02*
U.S. Cl. 354—148 **13 Claims**

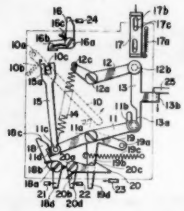


A flash extender assembly for operatively attaching a percussive flashcube to a camera with the flash source sufficiently offset from the camera lens to reduce "red-eye" effect. The extender is a three-piece assembly comprising a retaining base identical to the flashcube base and insertable into a camera socket, a flashcube cover affixed to the retaining base and having its top wall adapted for receiving and detachably retaining the base of an inserted flashcube, and a plurality of rods extending from the retaining base toward the top wall of the cover and interconnected at one end by a flexible web attached to the retaining base. The retaining base has an aperture adjacent each rod through which the respective rod is accessible to be actuated by a flash actuating member in the camera, and each of the rods is aligned with a slot in the top wall of the cover and adapted to move therethrough upon actuation for firing a flashlamp in an inserted flashcube.

3,810,216
DRIVING MECHANISM FOR THE MOVABLE REFLECTOR IN A SINGLE LENS REFLEX CAMERA

Hiroshi Ueda, Nara, Japan, assignor to Minotta Camera Kabushiki Kaisha, Minami-ku, Osaka-shi, Japan

Filed Dec. 12, 1972, Ser. No. 314,458
Claims priority, application Japan, Dec. 17, 1971, 46-101884
Int. Cl. G03b *19/12*
U.S. Cl. 354—156 **13 Claims**

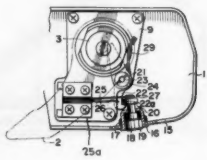


A driving mechanism for the movable reflector in a single lens reflex camera, wherein, when the movable reflector is rotated from a viewing position to a photographing position, in relation to the optical axis, the rotating torque increases proportionally to the increase of the angle of rotation, and when the movable reflector reaches the photographing position, the shutter release is positively effected. In using this mechanism, the movable reflector can be manually operated, and the image condition at the set value of the aperture can be observed in advance. The driving mechanism includes at least one closed loop-type motion system comprising two levers connected at one ends by a connecting link and at the other of their ends by a spring.

3,810,217
SWITCH OPERATING DEVICE FOR PHOTOGRAPHIC CAMERAS

Toshiaki Matsumoto, Amagasaki, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan

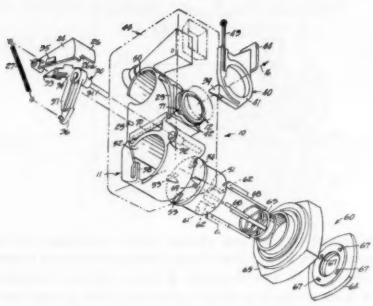
Filed May 31, 1972, Ser. No. 258,302
Claims priority, application Japan, June 1, 1971, 46-37459
Int. Cl. G03b *19/04*
U.S. Cl. 354—204 **11 Claims**



In a photographic camera having a battery power source and an electric circuit includes a normally closed power source switch and an operating button for opening the power source switch. A retaining member retains the power source switch in an open condition when the operating button is operated. A winding lever is movable between a rest position and an operating position and actuates the retaining member when the winding lever is at its rest position to retain the

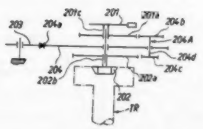
operating button in a position wherein the power source switch is open. When the winding lever is at its operating position the retention of the operating button is released.

3,810,218
CAMERA MECHANISM
James A. Millett, Fountain Valley, Calif., assignor to Bank of Montreal, Los Angeles, Calif.
Filed Oct. 13, 1972, Ser. No. 297,324
Int. Cl. G03b *15/04, 9/44, 17/24*
U.S. Cl. 354—204 **18 Claims**



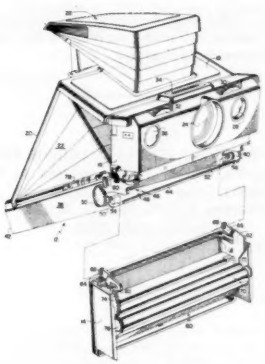
A small miniature camera employs as a primary operating mechanism a spring biased shutter bellcrank which is arranged so one of its arms or pawls operates a pivoted shutter blade and cooperates with the other pawl to control the film advance mechanism to prevent double exposures. Also, the disposition of the pawls is such that one of them may be employed to trigger impulse operated flash cubes in timed relationship with the shutter opened by the other pawl. To avoid complex indexing mechanisms within such a camera an optical indexing feature is provided which employs a separate light path to the edge of a film strip that is controlled by the shutter to mark the developed film strip with a reference mark for subsequent automatic film processing procedures.

3,810,219
FILM TRANSPORTING MECHANISM FOR STILL CAMERAS
Guenter Fauth, Unterhaching, Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Dec. 11, 1972, Ser. No. 314,277
Claims priority, application Germany, Dec. 9, 1971, 2161078
Int. Cl. G03b *1/62, 19/04*
U.S. Cl. 354—206 **15 Claims**



A film transporting mechanism for use in still cameras wherein a lever or wheel constitutes the input member of a planetary transmission. The sun gear or planet carrier of the transmission is held against rotation by a film scanning device during a first stage of rotation of the input member from its starting position to a fixed end position and while the input member rotates a spur gear or an internal gear by way of one or more planet pinions whereby the spur gear or internal gear rotates the takeup reel in a direction to collect the film. When the transport of film by the length of a frame is completed, the scanning device releases the sun gear or the planet carrier and arrests the spur gear or internal gear to thus terminate the transport of film while the input member continues to rotate toward its fixed end position and drives the sun gear or planet carrier. This enables the input member or a part which derives motion therefrom to perform one or more additional functions, such as the indexing of a multiple flash lamp holder and/or the cocking of a shutter or impeller, subsequent to completion of film transport by the length of a frame. The extent of movement of the input member from its starting to its fixed end position is independent of the angle through which the takeup reel must be rotated in order to advance the film by the length of a frame.

3,810,220
DETACHABLE SPREAD ROLLER HOUSING SECTION
Richard Paglia, Carlisle, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Oct. 24, 1972, Ser. No. 299,668
Int. Cl. G03b *17/52*
U.S. Cl. 354—212 **8 Claims**

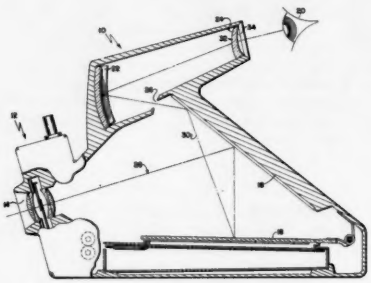


Photographic apparatus of the self-developing type including a first housing section having an open end chamber for receiving a film assemblage and a second housing section having a pair of processing rollers mounted thereon. The second housing section is pivotally coupled to the first housing section by a pair of laterally spaced brackets, each of which has an aperture therein for receiving an inwardly facing projection mounted on the first housing section. The second housing section is readily disconnected from the first housing section by pivoting the second housing section to a film loading position and then flexing one of the brackets to a position wherein the projection is withdrawn from the aperture. The second housing section is readily connected to the first housing section by reversing the aforementioned steps.

3,810,221
VIEWFINDER FOR A REFLEX CAMERA
William T. Plummer, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Nov. 11, 1971, Ser. No. 197,851
Int. Cl. G03b *13/02*
U.S. Cl. 88—1.5 R **14 Claims**

A special eye lens in a viewfinder for a reflex camera compensates for field tilt in a virtual image, thereby minimizing the depth accommodation required of an observer's eye to focus the virtual image at top and bottom. The field tilt stems from an oblique orientation of the axis of the viewfinder at its incidence with a focusing screen in the reflex camera. To compensate for it, a special refracting surface is formed on the eye

lens. The ophthalmic power of the special refracting surface varies with its vertical distance from the axis, causing the power of the eye lens to vary accordingly. A polynomial of at least the third order best describes the three-dimensional shape of the special refracting surface having mirror symmetry, but not rotational symmetry.



3,810,222

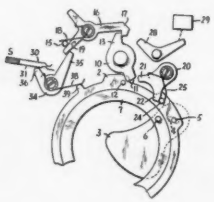
SWITCHING DEVICE FOR ELECTRONIC SHUTTER

Tadashi Nakagawa, Chiba, Japan, assignor to Seiko Koki Kabushiki Kaisha, Chuo-ku, Tokyo, Japan

Filed Nov. 6, 1972, Ser. No. 303,687

Int. Cl. G03b 9/60

U.S. Cl. 95—53 E **8 Claims**



A camera having an electronic shutter whose exposure time is controlled by a control circuit is provided with a switching device having a first switching state wherein same disconnects an electric power source from the control circuit and a second switching state wherein same connects the electric power source to the control circuit. A switch-actuating lever responds to movement of a shutter release lever to switch the switching device from its first switching state to its second switching state. A biasing spring coacts with the switch-actuating lever to maintain same in a position wherein the switching device is in its first switching state and the biasing spring is compressed in response to movement of the switch-actuating lever into a position wherein same shifts the switching device into its second switching state. The spring energy stored in the biasing spring is then released during movement of the shutter to its open position and the switching device is thereafter maintained in its second switching state independently of the position of the release lever and by the coaction between the switch-actuating lever and the switching device.

3,810,223

OPERATING DEVICE FOR FOCAL PLANE SHUTTER BLADES FOR CAMERA

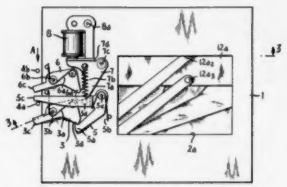
Kiyoshi Kitai, Tokyo; Eiichi Onda, Saitama; Mitsuo Koyama, Chiba; Shinji Nagaoka, Chiba, and Tadashi Nakagawa, Chiba, all of Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 21, 1973, Ser. No. 343,500

Claims priority, application Japan, Mar. 21, 1972, 47-32226

Int. Cl. G03b 9/08

U.S. Cl. 95—59 **2 Claims**



A focal plane shutter and shutter blade operating devices for a camera. The focal plane shutter has a plurality of shutter blades arranged in two separate groups operated independently of each other as a shutter-opening blade group and a shutter-closing blade group. A shutter blade operating mechanism comprises a pair of separate devices for opening and closing the shutter with the two groups independently of each other driven in the same direction. Each shutter blade-operating device has a slit-forming or aperture-forming shutter blade in each group driven separately from the other shutter blades of the groups. A main shutter blade-driving lever and an auxiliary parallel lever are both pivotally connected to each slit-forming shutter blade in each group of shutter blades. These two levers in each group of shutter blades are connected to the slit-forming blades with pivots in a common plane and with these pivots on the blade spaced equally from the respective centers of rotation of the parallel levers. The parallel levers function in a parallel arrangement to maintain aperture-forming straight edges travelling across the exposure aperture of the shutter uniformly.

3,810,224

FOCAL PLANE SHUTTER FOR CAMERA

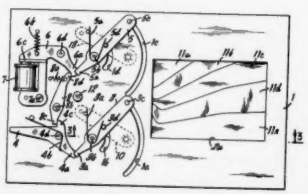
Kiyoshi Kitai, Tokyo; Eiichi Onda, Saitama; Mitsuo Koyama, Chiba; Shinji Nagaoka, Chiba, and Tadashi Nakagawa, Chiba, all of Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 13, 1973, Ser. No. 340,876

Claims priority, application Japan, Mar. 15, 1972, 47-26293

Int. Cl. G03b 9/26

U.S. Cl. 95—59 **3 Claims**



A focal plane shutter of a camera having two sets or groups of blades. One set of shutter blades opens the shutter aperture and the second set of shutter blades closes the aperture. Both sets of shutter blades are actuated in the same direction for opening the shutter and closing it. The shutter blades are actu-

ated by principal and supplementary driving members of respective driving mechanisms. Each driving mechanism has a principal or main driving lever that drives the shutter blades of a corresponding set of shutter blades except one which is driven stably and uniformly by a corresponding auxiliary driving member.

3,810,225

LENS SHUTTER FOR PHOTOGRAPHIC USE

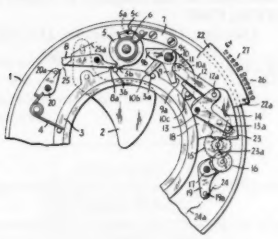
Yukio Nakamura, Yotsukaido, Japan, assignor to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 13, 1972, Ser. No. 305,687

Claims priority, application Japan, Nov. 19, 1971, 46-092912; Nov. 19, 1971, 46-108456; Nov. 19, 1971, 46-108457

Int. Cl. G03b *9/06, 9/24*

U.S. Cl. 95—63 **3 Claims**



A lens shutter for use in a camera for taking photographic exposures. The shutter has a single set of shutter blades for defining an exposure aperture and iris. The blades are operated by a ring actuated by an actuating lever variably positioned angularly by programming means to determine its angular rotation thereby to determine the extent of the opening of the iris. A main lever cooperating with and cammed by a driven main cam variable to angular extents drives the actuating lever and is variably adjusted as to its relationship with a governor variable as to the resistive force it applies as a braking force to the rotation of said ring thereby to control the speed of opening of the blades. A single programming or EV adjusting ring sets all the variable settings simultaneously including the exposure time in different and varied relationships constituting different programs settable by scales that are used in positioning the EV adjusting ring angularly to obtain the desired programs. The EV adjusting ring varies the angular relationship of the main lever and the actuating lever thereby varying the iris setting and one of the variables controlling exposure time, namely the extent of rotation of the shutter blade operating ring.

3,810,226

DEVICE FOR CONTROLLING SHUTTER EXPOSURE TIME

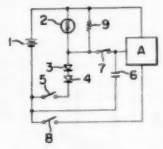
Shigeo Ono, Yokohama, and Ichiro Hamaguchi, Tokyo, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 229,127, Feb. 24, 1972, abandoned. This application July 26, 1973, Ser. No. 382,648

Int. Cl. G03b *7/08*

U.S. Cl. 354—51 **6 Claims**

A device for controlling shutter exposure time in an automatic exposure camera includes a storage circuit having a power source, a first switch, a photoconductive element with its resistance variable in accordance with the intensity of light from an object, diodes or resistors serially connected with the photoconductive element and parallel-connected with the power source through the first switch for dividing the voltage of the power source, a capacitor having one of the terminals thereof connected with a point of connection between the photoconductive element and the diodes or resistors for storing a voltage determined by the resistance value of the photoconductive element, a second switch serially connected between the said one terminal of the capacitor and said point of connection so that it is opened before operation of the camera's shutter, and a circuit for controlling the shutter exposure time in accordance with the voltage stored in the capacitor, characterized in that the other terminal of the capacitor remains connected with the power source as long as the second switch is closed.



3,810,227

SHUTTER RELEASE LOCKING DEVICE FOR CAMERA

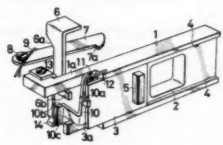
Harumi Tanaka, Kobe, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed June 1, 1972, Ser. No. 258,565

Claims priority, application Japan, June 8, 1971, 46-4648175

Int. Cl. G03b *19/00*

U.S. Cl. 95—11 R **9 Claims**



A device has a lens protecting plate disposed at the front side of an exposure window in horizontally movable manner for opening and closing the window and a shutter release locking member serving also as a first contact member of a switch for opening and closing a power source circuit for an exposure amount control device and the like. While the exposure window is closed, the locking member locks a shutter release member and keeps the switch open, whereas when the exposure window is opened, the locking member is moved in operative relation to the protecting plate at the final stage of its opening action to unlock the shutter release member and close the switch.

3,810,228

PHOTOGRAPHIC ELECTRONIC SHUTTER WITH POWER SWITCH CONTROL DEVICE

Tetsuya Taguchi, Kawasaki, and Mutsunobu Yazaki, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 14, 1973, Ser. No. 332,486

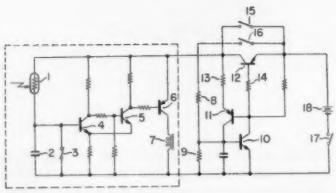
Claims priority, application Japan, Dec. 27, 1972, 47-3925

Int. Cl. G03b *9/62*

U.S. Cl. 95—53 E **8 Claims**

The electronic shutter is operated by a shutter operating circuit, and a battery or the like is connected in series with a power switch which is closed, responsive to winding of the film for advancing the film and opened, in response to operation of a shutter for taking a picture. A second switch is closed responsive to operation of a shutter release button, to connect the battery to the shutter operating circuit. A control circuit is energized, responsive to operation of the second switch, to close a transistorized holding circuit in parallel with the switch

and including the battery and the power switch, so that the shutter operating circuit remains energized even if the shutter release button is released to open the second switch. The



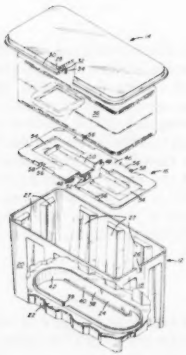
shutter operation circuit and the control circuit are deactivated responsive to opening of the power switch which is effected at the termination of shutter operation.

3,810,229

A LIGHT-TIGHT CARTRIDGE FOR CONTAINING SHEET MATERIAL

Walter B. Dunning, Le Roy; Dale S. Endter; William G. McDonald, both of Rochester, and Arthur C. Rissberger, Jr., Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 7, 1972, Ser. No. 304,448
Int. Cl. G03b *19/10*
U.S. Cl. 95—19 **9 Claims**



A hermetic, light-tight cartridge for containing sheet material containing a light-sensitive element, such as an aperture card. The cartridge is arranged to permit the cards to be withdrawn. The cartridge comprises a body portion having a generally rectangular cross section, a bottom wall portion, and opposed side and end walls connected to the bottom wall portion. The body portion has an open top through which the the cards may be withdrawn and an opening in the bottom wall portion. A removable top is provided for the body portion and a closure member is provided for the opening in the bottom wall. The closure member comprises a support plate disposed within the body portion and having a size generally equal to the size of the sheet material. The closure member is arranged to positively and releasably engage and seal the periphery of the opening in said bottom wall portion and the removable top is arranged to positvely and releasably engage and seal the top edge of the body portion. The closure member has means engageable exterior of the cartridge for movement into and out of engagement with the opening and to lift the sheet material out of the top of the opened cartridge.

ERRATUM

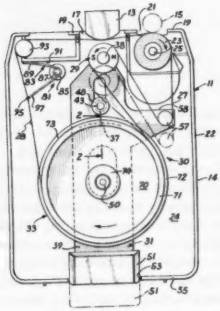
For Class 360—106 see:
Patent No. 3,809,827

3,810,230

DEMAGNETIZER AND CLEANING CARTRIDGE

Donald W. Orlowski, Glenview, and Edward A. Eul, Jr., Northbrook, both of Ill., assignors to Ampex Corporation, Redwood City, Calif.

Filed Jan. 12, 1972, Ser. No. 217,152
Int. Cl. G11b *5/46, 27/24*
U.S. Cl. 360—128 **7 Claims**



A cartridge-shaped unit may be operatively associated with a four or eight track magnetic tape playback and/or recording apparatus to position a cleaning tape and a multi-polar permanent magnet in position for cleaning and demagnetizing a transducer head of the apparatus. The cleaning tape is driven by the capstan and a cam is driven by the cleaning tape to slowly withdraw the magnet which rotates and produces a reversing flux field of diminishing intensity to demagnetize the head. Preferably, the cam includes a spiral grooved section. A stylus cam follower on a slide carrier follows the groove and shifts the carrier to retract the magnet slowly and automatically. Means in the form of a foil is detected by a sensing means in the apparatus thereby causing the head to shift and bring each section of the head associated with a track into contact with the cleaning tape.

3,810,231

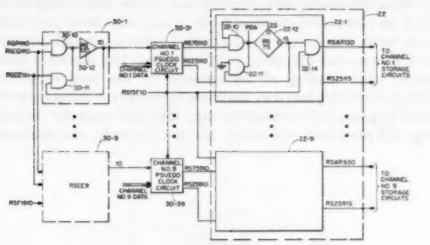
NOISE RECORD PROCESSING FOR PHASE ENCODED DATA

David D. DeVoy, Dedham; George J. Barlow, Tewksbury, and John A. Klashka, Andover, all of Mass., assignors to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Jan. 2, 1973, Ser. No. 320,229
Int. Cl. G11b *5/06*
U.S. Cl. 360—40 **22 Claims**

A magnetic tape system includes apparatus for determining when an actual data record should be processed by the system. The apparatus includes a plurality of resettable one shot circuits coupled to receive signals from a corresponding number of information channels. The output signals from the circuits

are combined to produce an average rate output signal and the signal is applied to at least one further resettable one shot circuit which is operative to produce an output signal when the average rate input signal persists for a predetermined number



of frames. The last resettable one shot circuit applies the output signal to the remainder of the system conditioning it to process the subsequently read information signals as part of an actual data record.

3,810,232

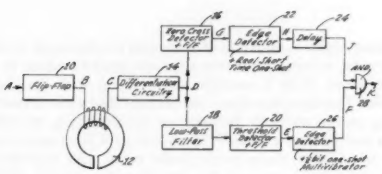
MAGNETIC MEMORY READ SYSTEM FOR DIGITAL RECORDINGS

Shirzad Aghazadeh, Los Angeles, Calif., assignor to The Singer Company, New York City, N.Y.

Filed Oct. 18, 1972, Ser. No. 298,730

Int. Cl. G11b *5/02*

U.S. Cl. 340—174.1 H **4 Claims**



A magnetic memory read system for digital recordings is provided which utilizes peak detection principles to reconstruct digital data recorded on a magnetic memory, such as a tape, drum or disc. The read system incorporates magnetic data reconstruction circuitry which employs both zero crossing-detecting means and threshold detection means in two channels which are ultimately combined to accurately detect the output of a magnetic read head at very high and very low peak densities. An enabling signal is developed in the second channel which permits precisely phased signals of the first channel to pass to the output for reconstruction into a corresponding data signal, but which disables the output with respect to spurious signals detected in the first channel, for example, to "shoulders" in the output signal of the read head. These "shoulders" appear as the packing density of the digital recordings on the magnetic medium falls below a particular threshold.

3,810,233

APPARATUS TO DETECT PHASE ENCODED DATA BEING READ FROM A DATA STORAGE SUBSYSTEM

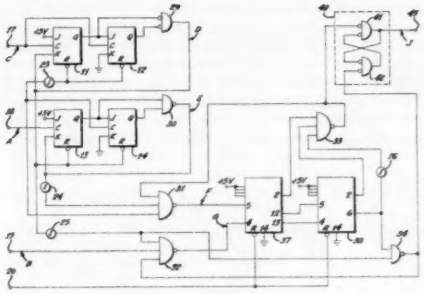
Edward R. Besenfelder, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Mar. 9, 1973, Ser. No. 339,813

Int. Cl. G11b *5/02*

U.S. Cl. 360—42 **4 Claims**

The presence of phase encoded data being read from a magnetic medium is detected by an envelope detector employing logic gates, flip-flops and a pair of up/down counters. The detector provides an output signal when the preamble portion of



the data envelope has been received from the magnetic medium. The detector continues to provide an output signal for a predetermined time after the end of the data.

3,810,234

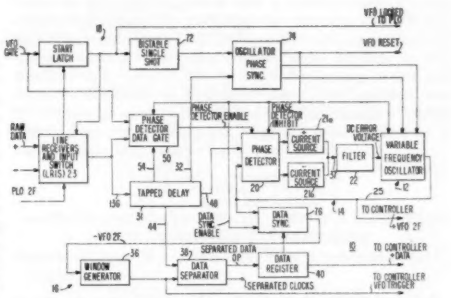
DATA RECOVERY CIRCUIT

Michael Ross Monett, San Jose, Calif., assignor to Memorex Corporation, Santa Clara, Calif.

Filed Aug. 21, 1972, Ser. No. 282,118

Int. Cl. G11b *5/02*

U.S. Cl. 340—174.1 A **21 Claims**



A data recovery system includes means for injection locking a variable frequency oscillator directly with raw data from a magnetic recording disc during the beginning of a read data operation in order to rapidly lock the variable frequency oscillator in phase with the incoming raw data signals. Desirably, the variable frequency oscillator includes an LC oscillator circuit, which provides excellent noise immunity.

3,810,235

ADAPTIVE DATA READOUT TIMING ARRANGEMENT

John Warren Hopkins, Rahway; Ray Clifford Townley, and Leonard Zimmerman, both of Middletown, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

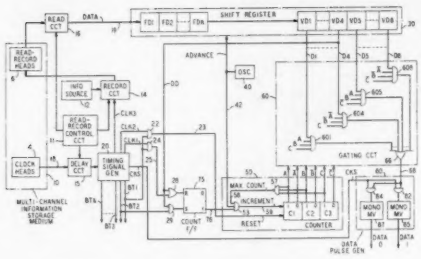
Filed Mar. 23, 1973, Ser. No. 344,250

Int. Cl. G11b *5/00*

U.S. Cl. 340—174.1 B **16 Claims**

Fixed and variable data bit position shifts in a memory system are compensated for by an adaptive readout strobe timing arrangement. One check bit transition per word is employed during readout to position the data bit stream relative to the recorded clock via an active shift register driven by an

asynchronous external clock. The number of shift register cells through which each data word flows is determined



digitally by a counter which measures the shift between the word check bit transition and a corresponding recorded clock bit.

3,810,236

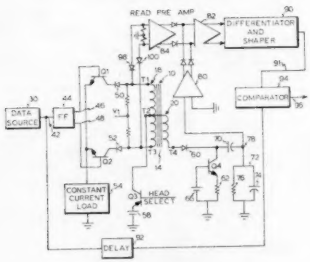
DATA RECORDING AND VERIFICATION SYSTEM

Noah Horowitz; Donald Stupeck, both of Los Angeles, and Lubomir Novak, Woodland Hills, all of Calif., assignors to Sperry Rand Corporation, New York, N.Y.

Continuation of Ser. No. 133,036, April 12, 1972, abandoned. This application Sept. 21, 1972, Ser. No. 290,833

Int. Cl. G11b *5/46*

U.S. Cl. 360—53 **7 Claims**



A digital data recording and verification system for use in moving magnetic medium recording systems such as tape or disc. The recording and verification system includes a magnetic head having a first winding used for writing (which may also be used for reading) information onto the medium and a second winding coupled thereto which may be used for erasing previously recorded information. As current, in response to input data, is driven through the first winding to produce flux changes in the head core, a voltage is induced in the second winding. This induced voltage is compared with the input data to verify, on a bit-by-bit basis, that the recorded data matches the input data.

3,810,237

TAPE RECORDER

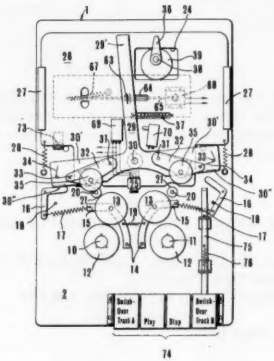
Yoshikuni Nozawa, Nagano, Japan, assignor to Sankyo Kogaku Kogyo Kabushiki Kaisha, Nagano, Japan

Filed Oct. 17, 1969, Ser. No. 867,234

Int. Cl. G11b *15/26*

U.S. Cl. 274—4 D **6 Claims**

A tape cassette loading tape recorder in which a multi-track magnetic tape provided with a plurality of tape tracks may undergo an automatic change in the direction of tape travel and head channels may be switched over from one to the other according to the directional change of tape travel. The tape recorder includes a pair of capstan shafts adapted to alternately drive the tape in opposite directions of tape travel, and a movable base plate having thereon a rockable operating lever to bring alternately any one of pinch rollers into engagement with its associated capstan shaft, a magnetic head provided with head channels, a head channel selecting switch means, and a tape-end detecting switch means. The movable base plate, upon loading of the cassette on the tape recorder, moves forwardly towards the cassette thereby making tape-to-head engagement to make the tape recorder ready for recording and play-back operation. On the contrary, the movable



base plate, upon completion of recording or play-back for all tape tracks, moves away from the tape cassette which is in turn released from a co-operating relation with the tape recorder. The tape recorder is further provided with a cassette loading means which is manually or automatically movable from a non-operative position to an operative position or vice versa. In addition, there are provided in the tape recorder a cam mechanism to control the operational sequence of the tape recorder elements as described above, and another cam mechanism to control the movement of the cassette loading means, both of mechanisms being electrically actuated by loading of the tape cassette to the tape recorder.

3,810,238

DICTATING MACHINE USING A MULTI-TRACK MAGNETIC STRIP AND HAVING A PHASING CONTROL MEANS

Marcel Jules Helene Staar, 479, Avenue Louise, Brussels, Belgium

Filed Apr. 24, 1972, Ser. No. 246,927

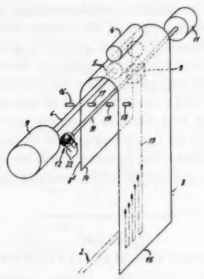
Claims priority, application Belgium, Apr. 23, 1971, 766204

Int. Cl. G11b *15/18*

U.S. Cl. 179—100.2 MD **11 Claims**

A dictating machine includes a recording and reading head for making and reading recordings on a magnetic strip. A reversible electric drive motor rotates a drive roller which engages the magnetic strip and moves the strip longitudinally past the head in alternate directions. A positioning device in the form of a shaft having an endless screwthread and driven by an electric drive motor serves to stop the head transversely of the direction of movement of the magnetic strip so that recordings on the strip are made and read along a series of longitudinal tracks. A detector switch is provided to ensure that each position of the head corresponds to a respective direction of movement of the strip. A control mechanism including a pair of photoelectric cells and respective lamps are used to detect the ends of the strip and to control the opera-

tion of the drive motor and/or the positioning device in response to the detection of an end of the strip whereby to



reverse the direction of movement of the strip and/or initiate the stepping of the head into another position.

3,810,239

AUTOMATIC CASSETTE CHANGER

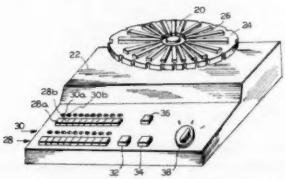
Isao Kozu; Hidetoshi Kurihara, and Tetsuo Hino, all of Osaka, Japan, assignors to Natsushita Electric Industrial Co. Ltd., Osaka, Japan

Division of Ser. No. 140,761, May 6, 1971. This application Sept. 19, 1972, Ser. No. 291,363

Claims priority, application Japan, May 6, 1970, 45-38780

Int. Cl. G11b *5/00*

U.S. Cl. 360—92 **8 Claims**



An automatic cassette changer has a rotary tray for storing a plurality of cassettes, a tape deck for playback of the cassettes, and tray driving means for rotating the rotary tray. Index means is provided for restricting the rotation of the rotary tray so as to position a selected single cassette at a first position. Cassette exchanging means transports the single cassette from the first position to an operative position to engage the single cassette with the tape deck. A motor drives the tray driving means and the cassette exchanging means, and clutch means is provided which is responsive to the index means upon restriction of the rotary tray by the index means so as to disengage the motor from the tray driving means and to couple the motor with the cassette exchanging means.

3,810,240

TAPE RECORDER

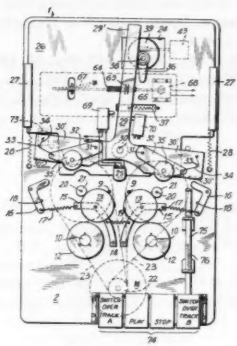
Yoshikuni Nozawa, Nagano, Japan, assignor to Sankyo Kogaku Kogyo Kabushiki Kaisha, Nagano, Japan

Division of Ser. No. 867,234, Oct. 17, 1969. This application Dec. 29, 1970, Ser. No. 102,527

Int. Cl. G11b *15/26*

U.S. Cl. 360—96 **2 Claims**

A tape cassette loading tape recorder in which a multi-track magnetic tape provided with a plurality of tape tracks may undergo an automatic change in the direction of tape travel and head channels may be switched over from one to the other according to the directional change of tape travel. The tape recorder includes a pair of capstan shafts adapted to alternately drive the tape in opposite directions of tape travel, and a movable base plate having thereon a rockable operating lever to bring alternately any one of pinch rollers into engagement with its associated capstan shaft, a magnetic head provided with head channels, a head channel selecting switch means, and a tape-end detecting switch means. The movable base plate, upon loading of the cassette on the tape recorder, moves forwardly towards the cassette thereby making tape-to-head engagement to make the tape recorder for recording and play-back operation. On the contrary, the movable base plate, upon completion of recording or play-back for all tape tracks,



moves away from the tape cassette which is in turn released from a co-operating relation with the tape recorder. The tape recorder is further provided with a cassette loading means which is manually or automatically movable from a non-operative position to an operative position or vice versa. In addition, there are provided in the tape recorder a cam mechanism to control the operational sequence of the tape recorder elements as described above, and another cam mechanism to control the movement of the cassette loading means, both cam mechanisms being electrically actuated by loading of the tape cassette to the tape recorder.

3,810,241

MODE CHANGEOVER APPARATUS FOR A MINIATURE TYPE CASSETTE TAPE RECORDER

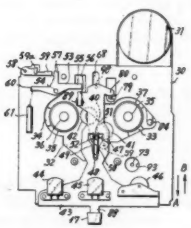
Sanjiro Murata, No. 10-60, 3 chome, Kami-Osaki, Tokyo, Japan

Filed Jan. 7, 1971, Ser. No. 104,718

Claims priority, application Japan, May 9, 1970, 45-39008; May 9, 1970, 45-44718; May 9, 1970, 45-44719

Int. Cl. G11b *15/02, 15/10*

U.S. Cl. 360—96 **6 Claims**



In a miniature type cassette tape recorder, a mode changeover apparatus can perform changeover operation between a recording or reproducing mode, tape fast forwarding mode, tape rewinding mode, and stop mode etc. by operating a single

operating button. In accordance with operation of the operating button, a driving plate on which magnetic heads and a pinch roller are mounted slides in a longitudinal direction or swings in a lateral direction. By the lateral swinging movement of the driving plate, one of two idlers provided between two pulleys adapted for rotating spools contained within a cassette is brought into contact with one of the two pulleys to effect fast forwarding or rewinding of the tape.

3,810,242
CASSETTE-TYPE MAGNETIC TAPE RECORDING AND REPRODUCING APPARATUS

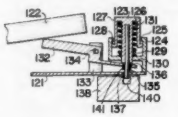
Hisao Ikeda, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 783,947, Dec. 16, 1968, Pat. No. 3,622,162. This application July 15, 1971, Ser. No. 163,039

Claims priority, application Japan, Feb. 12, 1968, 43-9323; Feb. 12, 1968, 43-9327

Int. Cl. G11b *5/00*

U.S. Cl. 274—4 C **4 Claims**



A tape cassette ejecting device for use with a small-sized cassette-type magnetic recording and reproducing apparatus in which a cassette lifting means is operatively connectable with an operation mode change-over lever of the apparatus for selecting the state of operation to allow lifting of a cassette mounted in the apparatus only in its inoperative state. The ejecting device comprises a manual push button carried on a base plate of the apparatus over the change-over lever movable along the base plate for causing pivotal movement of the lifting means, and a projection provided in the button for rendering it immovable. The blocking projection is loosely received into an opening specified in the change-over lever when the lever is displaced in its inoperative state.

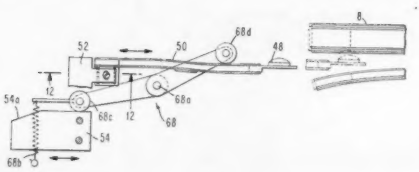
3,810,243
SELECTIVELY TENSIONED TRANSDUCER ASSEMBLY FOR OPERATION IN COMPLIANT RELATION TO INDIVIDUAL MEMORY DISCS OF A PARTITIONABLE AGGREGATE OF ROTATING FLEXIBLE DISCS

Bernard W. McGinnis, Poughkeepsie, and Anthony W. Orlando, Highland, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 2, 1973, Ser. No. 375,986

Int. Cl. G11b *5/60*

U.S. Cl. 340—174.1 E **4 Claims**



A resiliently suspended magnetic transducer (head) with distinctive convex contours is positioned to form a hydrodynamic bearing relative to the surfaces of randomly selected object discs in a continuously rotating laminar assembly of several hundred flexible discs. The normally contiguous discs are spread partially open by flexure at randomly selected interfaces. The head operates in the work space formed by such flexure. When the spring tension on the head suspension is suitably adjusted ("tuned") a hydrodynamically lubricated dimple intimately complementing the head contour forms in the rotational path of the object disc at head interface. The dimple displacement is generally greater than a disc thickness. A constant tension empirically determined enables the head to operate with satisfactory conformality and lubrication relative to all but a small number of end-positioned discs. By not using these end discs as working records the "TUNING0* tension may be pre-adjusted and maintained at a constant level. Alternately, the tension could be dynamically "tuned" or servoed to permit effective working operation relative to the end discs.

3,810,244
CROSS TYPE MAGNETIC HEAD

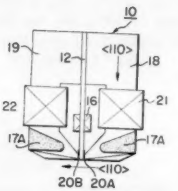
Tachio Hasegawa, Chichibu, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, and Canon Denshi Kabushiki Kaisha, Chichibu-shi, both of Japan

Filed Sept. 10, 1971, Ser. No. 179,285

Claims priority, application Japan, Sept. 14, 1970, 45/80712; Sept. 14, 1970, 45/80711

Int. Cl. G11b *5/26*

U.S. Cl. 360—118 **8 Claims**



A cross type magnetic head of the present invention includes a magnetic record or record-reproduce head core and an erase head core. The magnetic record or record-reproduce head core consists of a pair of magnetic record or record-reproduce head core members fixed to each other in side-to-side abutting relationship so as to form a front gap. The erase head core consists of a pair of erase head core members of high magnetic resistance and high magnetic permeability disposed so as to cross the magnetic record or record-reproduce head core in the vicinity of the front gap. Thus, erased tracks can be formed along the opposite side edges of a magnetized recorded track provided by the magnetic record or record-reproduce head core.

3,810,245
SINGLE CRYSTAL FERRITE MAGNETIC HEAD

Kazunori Ozawa, and Katsumasa Takahashi, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed June 13, 1972, Ser. No. 262,343

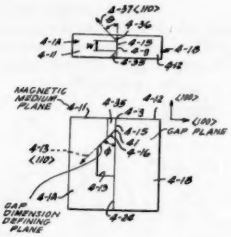
Claims priority, application Japan, June 28, 1971, 46-47071; June 28, 1971, 46-47072

Int. Cl. G11b *5/22*

U.S. Cl. 360—127 **22 Claims**

A single crystal ferrite material magnetic head for a video tape recorder or other device which is formed with a pair of half-cores with an opening between them for winding and in which the magnetic gap by which the magnetic tape passes is formed of surfaces which are uniform and which have minimum breakage and roughness due to the fact that the planes on which the ferrite single crystal material is cut coincides with the orientation of the crystals of the material which gives the minimum breakage and cracking. Experimental tests

have indicated that single crystal ferrite material may be cut or ground on certain planes with greater ease thus resulting in less breakage, fracture and cracking than on other planes,



and, the present invention provides magnetic cores which are so formed that the transducing gap takes advantage of these discoveries and results in improved magnetic heads.

3,810,246

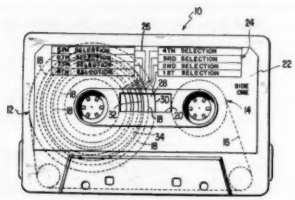
REELABLE MAGNETIC TAPE HAVING EDGE MARKED CUE INDICIA FOR DIRECT VIEWING IN THE REELED CONDITION

Wayne B. Stone, Jr., Bethesda, Md., and Alan Beaumont, Stamford, Conn., assignors to Indexette Tapes, Inc., New York, N.Y.

Filed Nov. 17, 1971, Ser. No. 199,475

Int. Cl. G11b *5/78, 27/34*

U.S. Cl. 260—134 **10 Claims**



Cue indicia applied to one or both side edges of a magnetic tape may be directly viewed through the conventional cartridge viewing window as the tape is being reeled in either direction.

The application of edge marked cue indicia may be perfomed automatically in conjunction with the recording of commercially pre-recorded tapes, automatically in conjunction with cartridge tape loading or manually in the case of home recorded tapes.

3,810,247

TELEPHONE SET CIRCUIT

Yasuhiro Ono, Niza, Japan, assignor to Iwasaki Tsushinki Kabushiki Kaisha, a/k/a Iwatsu Electric Co., Ltd., Tokyo-to, Japan

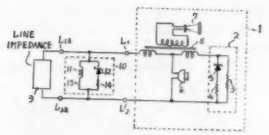
Filed Sept. 27, 1971, Ser. No. 184,121

Claims priority, application Japan, Sept. 30, 1970, 45-85074

Int. Cl. H04m *1/00*

U.S. Cl. 179—81 R **16 Claims**

A telephone set circuit having a talking circuit formed by a transmitter, a receiver, an induction coil and a balancing network. The induction coil serves to couple the receiver and the transmitter in conjugate relationship between a two-line subscriber's line and the balancing network. The balancing network includes a series-connected combination of a nonlinear resistance element and an ohmic resistance. A control circuit formed into a four terminal network is connected in cascade with terminals of the talking circuit. The control circuit is formed by use of an inductance element or an inductance circuit for compensating the capacitive component of the subscriber's line, to which the telephone set circuit is connected, and a nonlinear resistance element for controlling the value of the inductance element or the inductance circuit in accordance with the supplied direct current of the subscriber's line.



3,810,248

MICROWAVE HEATING APPARATUS

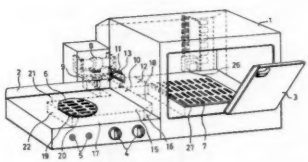
Per Olov G. Risman, Vastra, Sweden, and Lars O. Rosengren, Washington, D.C., assignors to Husgvarna Vapenfabriks Aktiebolag, Huskvarna, Sweden

Filed Oct. 12, 1971, Ser. No. 188,015

Claims priority, application Sweden, Oct. 19, 1970, 14061/70

Int. Cl. H05b *9/06*

U.S. Cl. 219—10.55 **7 Claims**



A microwave heating apparatus is disclosed, the apparatus being provided with a treatment chamber, a microwave source, and a wave guide having a mode converter. A first section of the wave guide connected to the treatment chamber is joined to a second section connected to the microwave source and has a rectangular cross-sectional area with sides approximately equal to a and b under formation of a so-called H-bend, the first section having a cross-sectional area in the form of a rectangle with sides approximately equal to $n \times a$ and b, where $n = 2, 3, 4$, etc., and wherein the H-bend between two outer sides of the respective wave guide sections have a corner-plate parallel to the rectangle side b of the wave guide cross-section areas and form inside obtuse angles with the outer side. The apparatus ensures spreading and distribution of the radiation in the treatment chamber with an even intensity.

3,810,249

GAS/ELECTRIC CONTROL MECHANISM

Eric McGowan, Shepperton, England, assignor to United Gas Industries Limited, London, England

Filed Feb. 14, 1972, Ser. No. 226,046

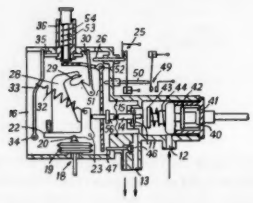
Claims priority, application Great Britain, Mar. 5, 1971, 6085/71

Int. Cl. F27d *11/00*

U.S. Cl. 219—279 **8 Claims**

A control mechanism particularly for use with an absorption-type refrigerator of the kind which has provision for heat-

ing powered both by gas and by electricity, either of which may be used to the exclusion of the other. The control mechanism operates both an electrical switch for the electricity power and a gas valve for the gas supply by a common mechanical linkage under the influence of a temperature sensor, so that whichever heating method is selected the control mechanism needs no adjustment.



3,810,250

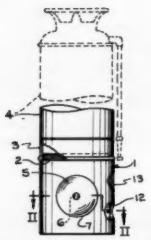
ACCESSORY TO FIRE EXTINGUISHER

Roger McGregor, 2205 Nicolas Perrot, Montreal, Quebec, Canada

Filed Jan. 17, 1973, Ser. No. 324,327

Int. Cl. F21v *33/00*

U.S. Cl. 240—6.4 R **5 Claims**



The invention relates to an accessory for a fire-extinguisher in the form of an attachment to the base, comprising a container for at least one and as many as three lamps with reflectors, all of which are activated by batteries and may, by means of a switch, be employed in the event of a fire to illuminate the direction of the jet from the fire extinguisher.

3,810,251

PRECISION CONSTANT SPEED CONTROL FOR VARIABLE SPEED PRIME MOVER

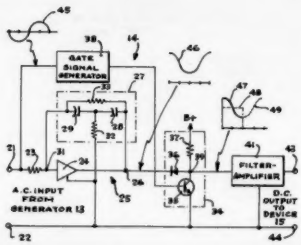
Carl G. Blanyer, Thousand Oaks, Calif., assignor to Abex Corporation, New York, N.Y.

Filed Jan. 3, 1972, Ser. No. 215,063

Int. Cl. H02p *9/04*

U.S. Cl. 290—40 **7 Claims**

A precision constant-speed control for a motor or other prime mover driving an output shaft and equipped with a speed control device, such as a servo valve, reponsive to an applied D.C. control signal. The precision control includes a prime signal generator developing a prime electrical signal having a frequency that varies with changes in the shaft speed; the prime signal is applied to a solid-state synchronous gating detector, having a filter connected to its output, to develop a D.C. control signal which varies in amplitude as a linear function of the frequency of the prime signal. This control signal is applied to the speed control device to maintain the prime mover speed constant within about one percent.



3,810,252

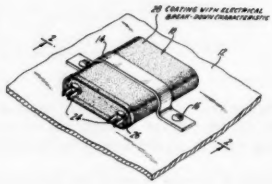
GROUND BONDED APPARATUS

Edwin S. Leister, Maplewood; George F. Kovach, Union, both of N.J., and William M. Robinson, New Bedford, Mass., assignors to Duralac Chemical Corporation, by said Leister and Kovach and Cornell-Dubilier Electric Corporation, both of Newark, N.J., by said Robinson

Filed Apr. 23, 1973, Ser. No. 353,632

Int. Cl. H02h *7/16*

U.S. Cl. 317—12 R **8 Claims**



An electrical device includes a metal container enclosing an electrical component, especially a capacitor having a metal container enclosing a capacitor winding separated by electrical insulation from the metal container. A bracket clamps the device to a grounded metal support, the bracket and the support constituting grounding and mounting means. A corrosion-resistant coating covers the metal container. This coating has low electrical resistance (compared to usual paint) and it has a break-down characteristic causing a short-circuit to be formed between the metal container and the grounding and mounting structure in case an electrical fault should develop in the electrical insulation separating the container from the electrical component in the container. The short-circuit prevents the rise of container-to-ground voltage to a dangerous level despite possibly high ground-fault currents, e.g., 120 amperes. Preferred coatings use heat-degradable resins to impart corrosion resistance. With such coatings break-down occurs when the container voltage rises no more than 10 volts above ground.

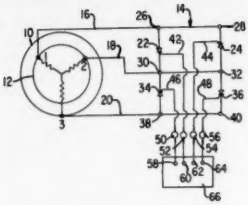
3,810,253
MOTOR SPEED CONTROL

Jose D. Vergara, San Ismael No. 845, Jardines de los Areis; Ramon Galvan, lo. Circunvalacion Div. Nte. No. 177 col. Independencia, and Fausto Leal, Calle 16 No. 8 U. Clemente Orojes, all of Guadalajara, Mexico

Continuation-in-part of Ser. No. 174,326, Aug. 24, 1971, abandoned, Continuation-in-part of Ser. No. 174,327, Aug. 24, 1971. This application Oct. 25, 1972, Ser. No. 300,862

Int. Cl. H02k *17/16*

U.S. Cl. 318—237 **25 Claims**



An electronic speed control device for controlling the speed of three phase motors of the wound rotor type includes a plurality of electronic elements each adapted to regulate the amount of the alternating current passed therethrough and induced to an associated phase of the rotor. The electronic elements provide a controlled short circuiting for all three phases of the rotor due to the setup of unidirectional current paths related to the biasing of the current. Each electronic element has a gate electrode connected to a master control circuit to be enabled thereby and thus pass a controlled current in the appropriate amount and at the precise time with a substantial suppression of the Joulean effect. The control circuit is integral within a motor housing and rotates with a shaft supporting the rotor. Slip rings may be utilized to provide electrical connections between the gate electrodes and the master control circuit which may be also exterior of the motor housing.

3,810,254
THERMOSTATIC SYSTEM FOR NUCLEAR GYROMAGNETIC RESONANCE SPECTROSCOPIC PERMANENT MAGNET APPARATUS

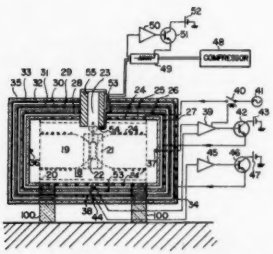
Yoshiharu Utsumi, and Hideaki Terui, both of Katsuta, Japan, assignors to Hitachi-Ltd., Tokyo, Japan

Filed July 7, 1972, Ser. No. 269,738

Claims priority, application Japan, July 10, 1971, 46-51303

Int. Cl. G01n *27/78*

U.S. Cl. 324—0.5 R **27 Claims**



A thermostatic system for nuclear gyromagnetic resonance spectroscopic permanent magnet apparatus comprising a thermostatic oven structure consisting of a first and second thermostatic ovens enclosing a permanent magnet is disclosed. The temperature of the first thermostatic oven is controlled and maintained at a predetermined temperature higher than ambient temperature. The second thermostatic oven is disposed between the permanent magnet and the first thermostatic oven, and its temperature is controlled and maintained at a predetermined temperature higher than the temperature of the first thermostatic oven. In this manner, the permanent magnet is held at a temperature substantially equal to the temperature of the second thermostatic oven.

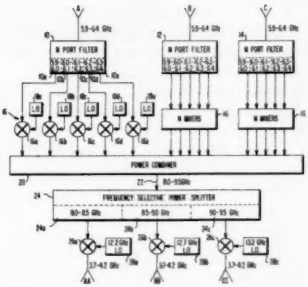
3,810,255
FREQUENCY TRANSLATION ROUTING COMMUNICATIONS TRANSPONDER

Marvin Richard Wachs, Rockville; Arnold L. Berman, Kensington, and Christoph E. Mahle, Rockville, all of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed June 10, 1971, Ser. No. 151,656

Int. Cl. H04b *1/59, 1/66*

U.S. Cl. 325—3 **5 Claims**



Frequency bands in spot beams received by a satellite transponder are routed to transmitted spot beams. Every band in all received beams are frequency translated into separate bands within the transponder. The separate bands result in a total bandwidth within the transponder equal to the number of received spot beams times the bandwidth of each spot beam. The total bandwidth is then divided among the transmitters — each divided portion being reconverted into the transmitter bandwidth. Routing of a single receive band is accomplished by mixing the band with a local oscillator signal having a frequency whose value causes the mixer output to assume a particular band within the total bandwidth — the particular band being diverted to the transmitted spot beam of interest.

3,810,256
TRANSISTOR AMPLIFIER FOR BROAD-BAND INFORMATION SIGNALS

Willem Van Doorn, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 28, 1973, Ser. No. 336,623

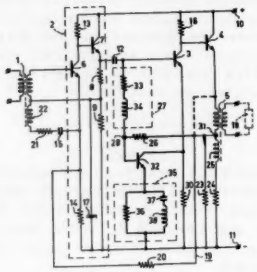
Claims priority, application Netherlands, Mar. 17, 1972, 7203557

Int. Cl. H03f *1/08*

U.S. Cl. 330—28 **10 Claims**

A broad-band transistor amplifier comprising a negative feedback circuit for maximum negative feedback as well as a circuit with which in the manner of a negative feedback exclusively the distortion products occurring in the output signal of

the amplifier are subjected to a feedback for the purpose of additionally reducing these distortion products. To this end the transistor amplifier includes a cascade arrangement of two

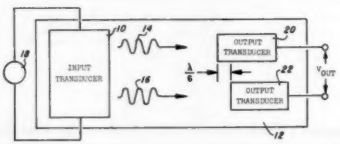


impedances whose common connection point is connected to the input of a phase inverter stage which injects the distortion products in phase opposition into the output circuit of the amplifier.

3,810,257
ACOUSTIC SURFACE WAVE TRANSDUCER CONFIGURATION FOR REDUCING TRIPLE TRANSIT SIGNALS

William Stanley Jones, Bramhall, England, and Clinton Sylvester Hartmann, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 1, 1973, Ser. No. 328,568
Int. Cl. H03h *9/26, 9/30, 9/32*
U.S. Cl. 333—30 R **11 Claims**

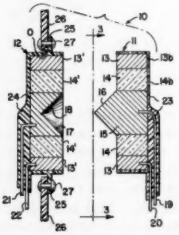


An acoustic surface wave transducer configuration characterized by substantial elimination of triple transit reflection output signal related components is provided. The configuration includes two parallel acoustic channels on a suitable substrate. First and second output transducers are defined respectively in the channels, and are off set by one sixth of an acoustic wavelength. The main signal is substantially unaffected whereas triple transit signals are 180° out of phase and electrically cancel.

3,810,258
QUICK CONNECT ELECTRICAL COUPLER

William R. Mathauser, P. O. Box 5, Sun Valley, Idaho

Filed July 11, 1972, Ser. No. 270,803
Int. Cl. H01r *11/30*
U.S. Cl. 339—12 R **9 Claims**

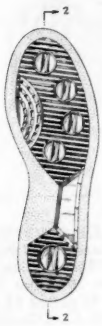


A unique quick connect electrical coupler, comprising a female coupling half having electrical contact means, magnet means and tapered recess means therein. A male coupling half having electrical contact means and magnet means therein and tapered projecting means adapted to be received in said recess means in said female coupling half to automatically align said male and female coupling halves relative to one another, said electrical contact means and said magnet means in said male and female coupling halves being in contacting alignment with one another when said coupling halves are coupled together, and said tapered projecting means and recess means preventing lateral displacement of the coupling halves relative to one another when they are coupled together.

DESIGNS

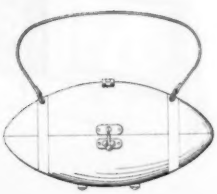
MAY 7, 1974

231,584
SHOE SOLES
Thomas A. Edmonds, Abingdon, Md., assignor to Bata Shoe Company, Inc., Belcamp, Md.
Filed Feb. 28, 1972, Ser. No. 230,179
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320

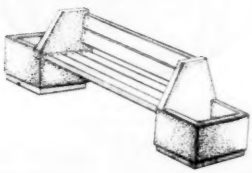


231,585
INDICATOR BELT
Masao Yoshimura, Inglewood, Calif., assignor to The Mailbox, Inc., Los Angeles, Calif.
Filed Dec. 6, 1972, Ser. No. 312,597
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—380

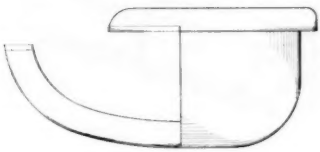
231,586
HANDBAG OR THE LIKE
Cecilio I. Lazo de la Vega, P.O. Box 554, Valdosta, Ga. 31601
Filed Mar. 30, 1972, Ser. No. 239,845
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—87 F



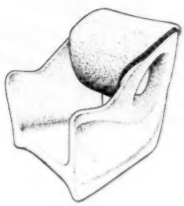
231,587
COMBINED BENCH AND MULTIPLE PLANTER UNIT
Emmett R. Herrera, Ventura, Calif. (32 Museum Way, San Francisco, Calif. 94114)
Filed Oct. 16, 1972, Ser. No. 298,000
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—4



231,588
TABLE ATTACHABLE SEAT FOR A CHILD
Lawrence A. Hanley, 715 A St., Coeur d'Alene, Idaho 83814
Filed Apr. 20, 1972, Ser. No. 246,114
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—9

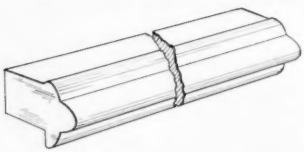


231,589
CHILD SAFETY SEAT
Milton W. Bloom, Toronto, Ontario, Canada, assignor to Donlee Manufacturing Industries Limited, Toronto, Ontario, Canada
Filed Aug. 31, 1972, Ser. No. 285,489
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—9

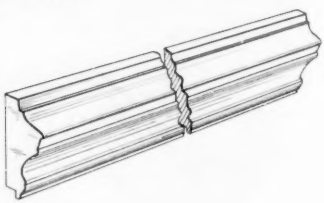


231,590
COMBINED TOTE BAG AND STADIUM SEAT CUSHION OR SIMILAR ARTICLE
Opal I. McKinney, R.R. 4, Grayson, Ky. 41143
Filed Jan. 17, 1973, Ser. No. 324,438
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—202

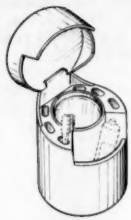
231,591
PICTURE FRAME MOULDING
Johannes Vihma, Toronto, Ontario, Canada, assignor to Artistic Woodwork Co. Ltd., Downsview, Ontario, Canada
Filed Jan. 8, 1973, Ser. No. 322,089
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—246



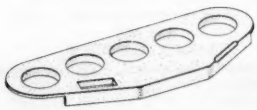
231,592
PICTURE FRAME MOULDING
Johannes Vihma, Toronto, Ontario, Canada, assignor to Artistic Woodwork Co. Ltd., Downsview, Ontario, Canada
Filed Jan. 8, 1973, Ser. No. 322,090
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—246



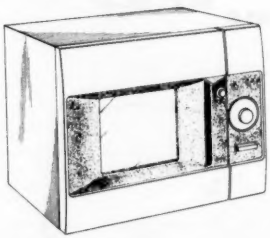
231,593
TOOTHBRUSH KIT
Philip D. Ockerman, 812 Barrie, Flint, Mich. 48507
Filed July 10, 1972, Ser. No. 269,990
Term of patent 7 years
Int. Cl. D6—*04*
U.S. Cl. D6—94



231,594
BEVERAGE SERVING TRAY
Leo H. Demers, 22847 Poplar Beach, St. Clair Shores, Mich. 48081
Filed Jan. 26, 1973, Ser. No. 326,726
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—71

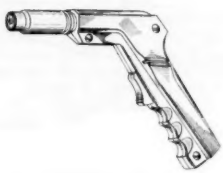


231,595
PORTABLE MICROWAVE OVEN OR SIMILAR ARTICLE
Raymond W. Young, 4227 Alton Road 40207, and Thomas J. Binzer, 7600 S. Bernard Way 40291, both of Louisville, Ky.
Continuation-in-part of design application Ser. No. 316,852, Dec. 20, 1973, which is a continuation-in-part of design application Ser. No. 316,882, Dec. 20, 1972, both now abandoned. This application Aug. 3, 1973, Ser. No. 385,606
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128

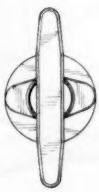


231,596
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Jan. 15, 1973, Ser. No. 323,861
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—150

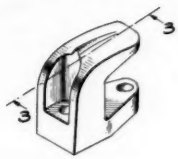
231,597
WELDING GUN FOR SHIELDED ARC WELDING
Wilhelm Dinse, 2 Hamburg 70, Konigsreihe 12, Hamburg, Germany
Filed June 1, 1972, Ser. No. 258,919
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—30



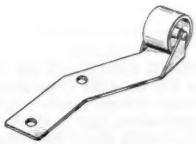
231,598
DOOR ROTOR LOCK ASSEMBLY OR SIMILAR ARTICLE
Lyle M. Northrup, New Hampton, Iowa, assignor to Lynor Engineering, Inc.
Filed July 17, 1973, Ser. No. 380,103
Term of patent 7 years
Int. Cl. D8—*07, 06*
U.S. Cl. D8—109



231,599
BEAM CLAMP BODY
Raymond M. Rumble, Girard, Ohio, assignor to Michigan Hanger Company, Inc., Hubbard, Ohio
Filed June 19, 1973, Ser. No. 371,410
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—235

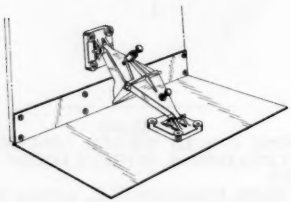


231,600
AWNING GUARD ROLLER ASSEMBLY FOR RECREATIONAL VEHICLE DOORS OR THE LIKE
Ray E. Mullis, Greensboro, N.C., assignor to Pine State Tool and Machine Co., Inc., Greensboro, N.C.
Filed June 18, 1973, Ser. No. 371,059
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—238

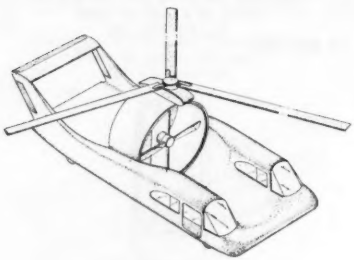


231,601
CONTAINER FOR LIQUIDS OR THE LIKE
Daniel S. Cvacho, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed Mar. 20, 1972, Ser. No. 236,548
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216

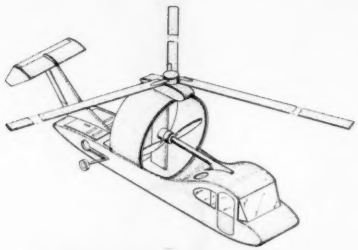
231,602
BOAT PLANING FIN
Niklas F. Zetterberg, 156 Muerdago Road, Topanga, Calif. 90290
Filed May 11, 1972, Ser. No. 252,530
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D12—70



231,603
ROTARY WING AIRCRAFT OR THE LIKE
Alexander Krivka, 4201 Crownfield Court, Westlake Village, Calif. 91360
Original design application Apr. 1, 1969, Ser. No. 17,089, now Patent No. 22,696, dated Aug. 31, 1971, which is a continuation-in-part of abandoned design application Ser. No. 8,165, Aug. 8, 1967. Divided and this application June 18, 1970, Ser. No. 23,552
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—73



231,604
ROTARY WING AIRCRAFT OR THE LIKE
Alexander Krivka, 4201 Crownfield Court, Westlake Village, Calif. 91360
Original design application Apr. 1, 1969, Ser. No. 17,089, now Patent No. 221,696, dated Aug. 31, 1971, which is a continuation-in-part of abandoned design application Ser. No. 8,165, Aug. 8, 1967. Divided and this application June 22, 1970, Ser. No. 23,592
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—73

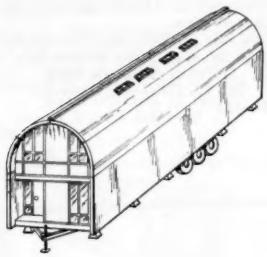


231,605
AIRPLANE
Fred D. Frajola, Bellevue, and Robert P. Norton, Mercer Island, Wash., assignors to The Boeing Company, Seattle, Wash.
Filed May 12, 1972, Ser. No. 252,965
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—80

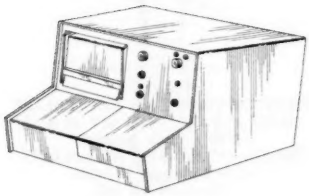
231,606
AIRPLANE
David G. Blattner, Mercer Island, and Robert H. Drinnon, Kent, Wash., and Stefano P. Ruocco, Finale Ligure, Italy, assignors to The Boeing Company, Seattle, Wash.
Filed June 8, 1972, Ser. No. 261,142
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—80

231,607
AIRCRAFT
Lawrence Bernard Rellis, 10460 SW. 163rd St., Miami, Fla. 33157
Filed Oct. 19, 1972, Ser. No. 300,856
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—80

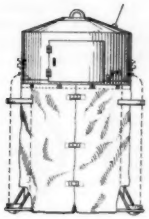
231,608
MOBILE BUILDING STRUCTURE
Richard A. Barlow, Springfield, Va. (2008 Dundee Road, Rockville, Md. 20850)
Filed Dec. 29, 1971, Ser. No. 213,795
Term of patent 7 years
Int. Cl. D12—*10*
U.S. Cl. D12—103



231,609
OPTICAL ELECTROPHORESIS SCANNER
Jan A. Vanden Broek, Ann Arbor, and George W. Toma, Dexter, Mich., assignors to Transidyne General Corporation, Ann Arbor, Mich.
Continuation-in-part of design application Ser. No. 149,133, June 1, 1971, now Patent No. 225,990.
This application Oct. 19, 1972, Ser. No. 298,968
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D16—2 C

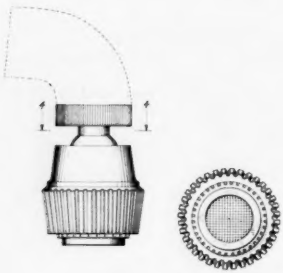


231,610
SEISMIC GAS EXPLODER
Delbert W. Donmeyer, Plano, Tex., assignor to Atlantic Richfield Company, New York, N.Y.
Filed Feb. 14, 1972, Ser. No. 226,369
Term of patent 14 years
Int. Cl. D22—*03*
U.S. Cl. D22—10



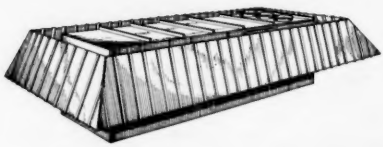
231,611
FISH HOLDER
Proctor N. Carter, 930 Fairmont, Jefferson City, Mo. 65101
Filed Jan. 8, 1973, Ser. No. 321,845
Term of patent 7 years
Int. Cl. D22—*30*
U.S. Cl. D22—30

231,612
FAUCET SPRAY-AERATOR
Donald W. Doman, Janesville, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Aug. 3, 1972, Ser. No. 277,798
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35

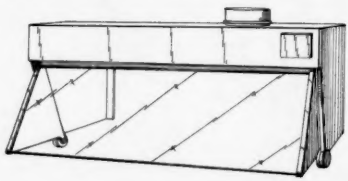


231,613
PILOT'S HEADSET HAVING RECEIVER AND TRANSMITTER
Richard H. Sarber, Ukiah, Calif., assignor to Multitech International Corporation, Oakland, Calif.
Filed Jan. 13, 1972, Ser. No. 217,718
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 H

231,614
ROOF-MOUNTED AIR CONDITIONING UNIT
Walter E. Woods and Paul E. Hammann, Bettendorf, Iowa, assignors to American Air Filter Company, Inc., Louisville, Ky.
Filed Feb. 4, 1972, Ser. No. 223,816
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—139

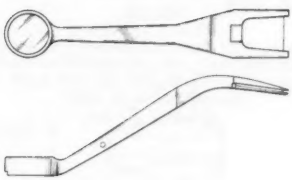


231,615
KITCHEN HOOD
Arne Nygard, Goteborg, and Stig Svensson, Jonkoping, Sweden, assignors to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden
Filed July 31, 1972, Ser. No. 276,361
Claims priority, application Sweden Feb. 7, 1972
Term of patent 14 years
Int. Cl. D23—*04;* D24—*01*
U.S. Cl. D23—151

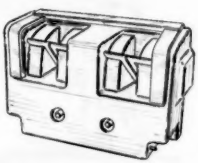


231,616
CAPSULE FOR DENTAL MATERIALS OR SIMILAR ARTICLE
Stephen L. Hiltebrant, Rocky River, and Reinhold Wilhelm Petruschke and Reinhold William Petruschke, Kirtland, Ohio, assignors to The Columbus Dental Manufacturing Company, Columbus, Ohio
Filed Aug. 22, 1972, Ser. No. 282,673
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—1 A

231,617
COMBINATION DENTAL FLOSS HOLDER AND MIRROR
Jack R. Lucas, 6500 Sepulveda Blvd., Van Nuys, Calif. 91401
Filed Jan. 4, 1973, Ser. No. 320,995
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—1 D

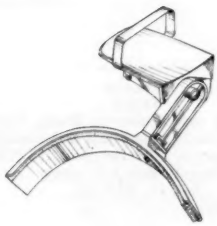


231,618
PORTABLE TRANSMITTER FOR REMOTE CONTROL OF ELECTRICALLY OPERATED EQUIPMENT
James Lindsay, Jr., Maple Heights, Ohio, Robert L. Lind, San Jose, Calif., and David E. Scott, Royal Oak, Mich., assignors to Square D Company, Park Ridge, Ill.
Filed July 12, 1973, Ser. No. 378,757
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R

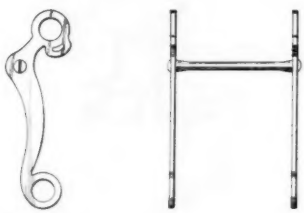


231,619
TRANSCRIBING UNIT FOR A DICTATION SYSTEM
Harry S. Kwiatkowski, Jr., Altamonte Springs, Fla. (513 W. Colonial Drive, Orlando, Fla. 32804)
Filed July 26, 1971, Ser. No. 166,325
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—14 B

231,620
TELEPHONE HAND-SET SUPPORT
Lyle H. Van Dyke, P.O. Box 14841, Portland, Oreg. 97214
Filed Jan. 10, 1972, Ser. No. 216,867
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



231,621
BRIDLE BIT
Mitchel R. Braley, 504 South 74 East Ave., Tulsa, Okla. 74115
Filed Aug. 9, 1971, Ser. No. 170,417
Term of patent 14 years
Int. Cl. D30—*04*
U.S. Cl. D30—21

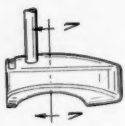


231,622
DOLL
Rouben T. Terzian and Marvin I. Glass, Chicago, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Nov. 20, 1972, Ser. No. 308,183
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R

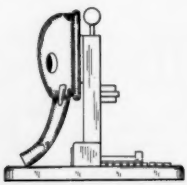
231,623
DOLL
Marvin I. Glass and Kathy A. Dunn, Chicago, Ill., assignors to Marvin Glass & Associates
Filed Jan. 8, 1973, Ser. No. 322,078
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R

231,624
PUTTER
H. Douglas Wilmoth, Lakewood, Colo., assignor to The Lange Company, Broomfield, Colo.
Filed Nov. 19, 1971, Ser. No. 200,667
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 CB

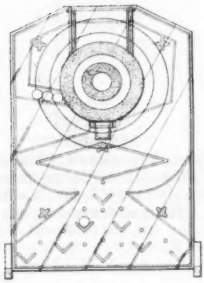
231,625
GOLF PUTTER
Frank D. Werner, Box SR9, Jackson, Wyo. 83001
Filed Sept. 15, 1972, Ser. No. 289,422
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 CB



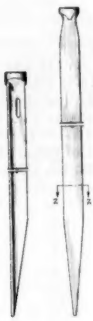
231,626
THERAPEUTIC EXERCISER
Charles Dennis Flanigan, San Jose, Calif., assignor to Overly Manufacturing Company, Greensburg, Pa.
Filed Dec. 4, 1972, Ser. No. 311,961
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 K



231,627
BOARD FOR A COMBINED DART AND PINBALL GAME
Bernard J. Cagan, Torrance, Calif., assignor to Placo Products Company, Torrance, Calif.
Filed Mar. 7, 1973, Ser. No. 338,648
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 LL

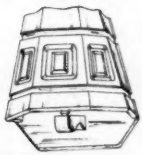


231,628
PLANT STAKE
Dennis Michael Bartels, Leawood, Kans., assignor to Mid-West Enterprises, Inc., Leawood, Kans.
Filed Dec. 30, 1971, Ser. No. 214,503
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D35—1



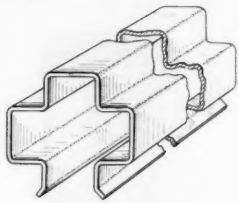
231,629
CANDLE HOLDER
Richard A. Schultz, Kansas City, Mo., assignor to Hallmark Cards, Incorporated, Kansas City, Mo.
Filed Oct. 17, 1972, Ser. No. 300,397
Term of patent 14 years
Int. Cl. D26—*01*
U.S. Cl. D48—2

231,630
WALL LAMP
George Sherry, 18480 Santa Alberta Circle, Fountain Valley, Calif. 92708
Filed Apr. 16, 1973, Ser. No. 351,514
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—4 B

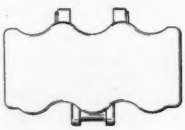


231,631
TICKET DISPENSER
Richard H. Burns, Troy, Ohio, assignor to The Hobart Manufacturing Company, Troy, Ohio
Filed Apr. 26, 1972, Ser. No. 247,928
Term of patent 14 years
Int. Cl. D31
U.S. Cl. D52—2 R

231,632
CONVEYOR SUPPORT CHANNEL
James Price Minns, Christies Beach, South Australia, Australia, assignor to Consolidated Standard Conveyor Systems Pty. Ltd., North Plympton, South Australia, Australia
Filed May 16, 1972, Ser. No. 253,918
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D55—1 C



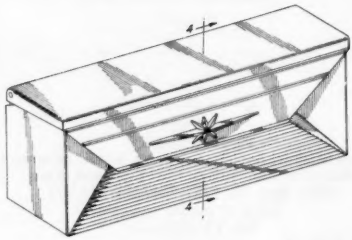
231,633
LINK FOR CONVEYOR
Hisao Totani, Kawaguchi, Japan, assignor to Pulton Chain Co., Ltd., Kawaguchi-shi, Japan
Filed July 25, 1972, Ser. No. 274,917
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D55—1 C



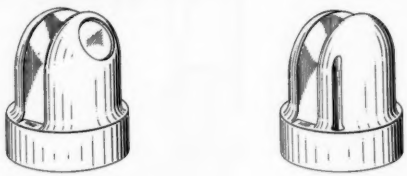
231,634
FONT OF TYPE
Clayton A. Stahlka, Eggertsville, N.Y., assignor to Andco Incorporated, Buffalo, N.Y.
Filed May 2, 1972, Ser. No. 249,747
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D64—12 B

231,635
TYPEWRITER
Richard H. Penney, New York, N.Y., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Jan. 12, 1973, Ser. No. 322,977
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11 A

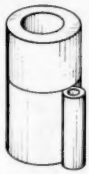
231,636
MAILBOX
Murray M. Fibus, Youngstown, Ohio, assignor to Steel City Corporation, Youngstown, Ohio
Filed May 25, 1972, Ser. No. 257,071
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D74—9 R



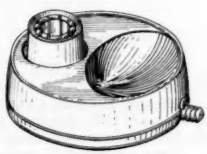
231,637
PAPER AND PENCIL HOLDER
Alwin John Stahel II, New Brighton, Minn., assignor to The Holes-Webway Co., St. Cloud, Minn.
Filed Aug. 14, 1972, Ser. No. 280,325
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—5 A



231,638
COMBINED CLIP DISPENSER AND PENCIL HOLDER
Robert M. Leedy, 7 Martindale Road, Short Hills, N.J. 07078
Filed Dec. 4, 1972, Ser. No. 311,651
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—5 A



231,639
PORTABLE DOUCHE APPARATUS
Vincent J. Gambello, New York, N.Y., assignor to Pulsatron Corporation, Forest Hills, N.Y.
Filed Mar. 16, 1973, Ser. No. 342,272
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 P



231,640
SMOKING PIPE OR THE LIKE
Richard W. Kahler, Clinton, Md., assignor to Surf and Psych, Inc., College Park, Md.
Filed May 25, 1973, Ser. No. 364,145
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D85—8 A

231,641
SHIPPING CONTAINER FOR MICROSCOPIC SLIDES OR THE LIKE
Niels Kristian Johan Christiansen, 20 Vesterbrogade, 1620 Copenhagen, Denmark
Filed Feb. 9, 1971, Ser. No. 114,095
Claims priority, application Denmark Dec. 23, 1970
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—1 D

231,642
SHIPPING CONTAINER FOR MISCROSCOPIC SLIDES OR THE LIKE
Nils Kristian Johan Christiansen, 20 Vesterbrogade, 1620 Copenhagen, Denmark
Filed Mar. 10, 1971, Ser. No. 123,117
Claims priority, application Denmark Dec. 23, 1970
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 D

231,643
RESINOUS DEEP TEXTURED DECORATIVE LAMINATE SHEET
Jack August Willard, Hamilton, Ohio, assignor to Formica Corporation, Cincinnati, Ohio
Filed Dec. 7, 1972, Ser. No. 313,022
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D87—3 G

231,644
TUFTING MACHINE CLIP
Randel P. Smith, Chattanooga, Tenn., assignor to The Singer Company, New York, N.Y.
Filed July 12, 1971, Ser. No. 161,410
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231,645
TUFTING MACHINE CLIP
Paul Eugene Jolley, Chattanooga, Tenn., assignor to The Singer Company, New York, N.Y.
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William M. Bardeau, 44 Princess Margaret Blvd., Islington, Ontario, Canada
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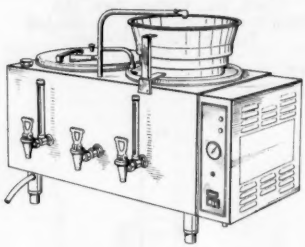

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Barron, Daniel. Propagation loss measuring device. 3,810,079, Cl. 340-3.00r.

Barry, Thomas Ian: *See—*
Gaskell, Philip Hedley; Lythgoe, Stanley; Irlam, Philip Sidney; Miller, Robert Percy; and Barry, Thomas Ian, 3,809,543.

Bartels, John H. Motor speed control apparatus for an electrically powered vehicle. 3,809,975, Cl. 318-39.000.

Barten, Piet Gerard Joseph, to U.S. Philips Corporation. Exposure device for manufacturing a display screen of a colour television picture tube, comprising a rotating lens. 3,810,196, Cl. 354-1.000.

Barthel, Hans: *See—*
Siebers, Gunter; Prenzel, Karl; and Barthel, Hans, 3,808,738.

Barthelemy, Gabriel: *See—*
Duthion, Louis; Coyotte, Claude Charles; Seguela, Claude Jean-Marie; Barthelemy, Gabriel; Cinquanta, Alain; and Drapeau, Yves, 3,809,372.

Barthelemy, Robert Lucien, to Etat Francais. System for detecting weak information signals in noisy receiver signals. 3,810,029, Cl. 328-167.000.

Basard, Robert; and Dalbera, Michel R. J., to International Standard Electric Corporation. Range-controlled variable gain device for pulse radar receiver. 3,810,178, Cl. 343-16.00m.

BASF Wyandotte Corporation: *See—*
Boehmer, Matthew A., 3,809,152.

Basf Wynadotte Corporation: *See—*
Niu, Hsien Ying; and Weipert, Eugene A., 3,809,723.

Bass, Merlyn Duane; and Boushek, Sidney Joseph, Jr., to Deere & Company. Harvesting platform suspension system. 3,808,781, Cl. 56-15.900.

Basse, Philip, to Comstron Corporation. Sensitive wide band voltmeters. 3,810,015, Cl. 324-120.000.

Bastian, Clyde E., Jr., to Global Marine Inc. Method of clearing a path through ice. 3,808,997, Cl. 114-40.000.

Baswell, Harlen L.: *See—*
Hays, John D.; Baswell, Harlen L.; Combs, Jerry A.; and Brown, Dale G., 3,809,989.

Batista, Roy I., to TRW Inc. Diffusion bonding apparatus. 3,809,309, Cl. 228-44.000.

Battelle Memorial Institute: *See—*
Gillot, Jacques; and Lux, Benno, 3,809,635.

Battini, Roberto: *See—*
Clementi, Anacleto; and Battini, Roberto, 3,809,688.

Baudouin, Pascal, to Mobil Oil Corporation. Grease composition. 3,809,647, Cl. 252-28.000.

Baumann, Dieter: *See—*
Habermeier, Jurgen; Porret, Daniel; and Baumann, Dieter, 3,809,660.

Baumann, Hans D., to Masoneilan International, Inc. High pressure soft seat valve. 3,809,362, Cl. 251-332.000.

Baumann, Ludwig. Appliance for bubbling compressed air through a liquid, particularly water in a bathing tub and the like. 3,809,073, Cl. 128-66.000.

Baumann, Wilfried. Cutting machine for cutting flat materials. 3,808,921, Cl. 83-155.000.

Baumgardner, John D.; and Ebeling, Dorothy J., to Donnelly Mirrors, Inc. View expanding and directing optical system. 3,809,461, Cl. 350-302.000.

Baumgardner, John D.; and Ebeling, Dorothy J., to Donnelly Mirrors, Incorporated. View expanding and directing optical system. 3,809,462, Cl. 350-302.000.

Baumgartner, Werner; Keller, Wolfgang; and Schnoeller, Manfred, to Siemens Aktiengesellschaft. Induction heating coil for a zone heating process. 3,809,846, Cl. 219-10.790.

Baus, Wolfgang: *See—*
Dobner, Reinhold; Willenbacher, Erich; and Baus, Wolfgang, 3,808,995.

Baxter Laboratories, Inc., mesne: *See—*
Pearce, Larry Neil, 3,808,969.

Bayer Aktiengesellschaft: *See—*
Erdmenger, Rudolf; Ullrich, Martin; and Hederich, Manfred, 3,809,140.
Lenz, Gunther; Krimm, Heinrich; and Schnell, Hermann, 3,809,679.
Sasse, Klaus; and Frohberger, Paul-Ernst, 3,809,763.

BBA Group Limited: *See—*
Smales, Herbert, 3,809,200.

Beatrice Foods Co., mesne: *See—*
Lindner, Henry J., 3,809,434.

Beaumont, Alan: *See—*
Stone, Wayne B., Jr.; and Beaumont, Alan, 3,810,246.

Beaumont, William, Hospital: *See—*
Cook, Kenneth J., 3,809,982.

Beaver, Donald V., to All-Steel Inc. Foundation framework for metal office furniture. 3,809,449, Cl. 312-194.000.

Beaver, William D.; and Lewis, Herbert O., to Comtec Economation, mesne. Method of automatically adjusting the frequency of crystal resonators. 3,808,752, Cl. 51-319.000.

Beck, Kurt-Gunther: *See*—
Wackerbarth, Folkard; and Beck, Kurt-Gunther, 3,809,620.

Beckens, Alfred. Fruit harvesting apparatus. 3,808,786, Cl. 56-329.000.

Becker, Alvin L. Fireplace unit. 3,809,058, Cl. 126-120.000.

Becker, Bernhard. Portable rod or true bender. 3,808,867, Cl. 72-321.000.

Becker, Jean-Jacques: *See*—
Heiler, Wolfgang; Muller, Rudolf; and Becker, Jean-Jacques, 3,808,993.

Becton, Dickinson and Company: *See*—
Arcudi, Joseph, 3,809,220.

Becton, Dickinson and Company, mesne: *See*—
White, James A., 3,810,152.

Beddoe, Stanley, to Plessey Handel und Investments A.G. Momentary switch with serpentine movable and coil spring stationary contacts. 3,809,839, Cl. 200-160.000.

Begemann, Carl J., to Philip Morris Incorporated. Cigarette packaging. 3,809,227, Cl. 206-264.000.

Beggs, James H.: *See*—
Kabat, Jules M.; and Beggs, James H., 3,810,096.

Behman, Stephen Barry; and Goldstein, Stephen, to International Business Machines Corporation. Memory system restoration. 3,810,129, Cl. 340-173.0dr.

Bell & Howell Company: *See*—
Mueller, Arthur C., 3,810,207.

Bell Canada: *See*—
Johnston, Walter Daniel, 3,809,818.

Bell Canada-Northern Electric Research Limited: *See*—
Springthorpe, Anthony John, 3,809,010.

Bell, Gunter; and Gehrmann, Werner, to Klockner-Werke AG. Hydraulic double telescoping mine prop. 3,808,946, Cl. 91-168.000.

Bell, James Alexander Evert: *See*—
Opratko, Vaclav; Bell, James Alexander Evert; and Ferrajuolo, Roberto Vincenzo, 3,809,549.

Bell, Oliver A., Jr., to Colt Industries Operating Corporation. Method and apparatus for electrical discharge machining. 3,809,847, Cl. 219-69.00p.

Bell, Oliver A., Jr., to Colt Industries Operating Corporation. Digitally controlled power supply for electrical discharge machining apparatus. 3,809,848, Cl. 219-69.00l.

Bell Telephone Laboratories, Incorporated: *See*—
Aho, Alfred Vaino; and Ullman, Jeffery David, 3,810,112.
Arpin, Lee James, 3,809,808.
Ashkin, Arthur; and Dziedzic, Joseph Martin, 3,810,131.
Bobeck, Andrew Henry, 3,810,132.
Bobeck, Andrew Henry; and Danylchuk, Irynej, 3,810,133.
Chandross, Edwin Arthur; Fork, Richard Lynn; Kaminow, Ivan Paul; and Tomlinson, Walter John, III, 3,809,686.
Chandross, Edwin Arthur; Pryde, Carolie Anne; Tomlinson, Walter John, III; and Weber, Heinz Paul, 3,809,732.
Chang, Tao-Yuan; and Wood, Obert Reeves, II, 3,810,042.
Hansen, Ralph Holm, 3,809,675.
Hopkins, John Warren; Townley, Ray Clifford; and Zimmerman, Leonard, 3,810,235.
Kalet, Irving; and Weinstein, Stephen Brant, 3,810,021.
Pferd, William; and Witt, Eugene Francis, 3,810,141.
Schneider, Herbert Anton, 3,810,130.

Bell, William H., to Hughes Aircraft Company. Along track terrain avoidance contouring system. 3,810,175, Cl. 343-7.0ta.

Belohoubek, Bohuslav; and Linda, Josef, to Tos Hostivar, Narodni podnik. Machine tool for heavy counter-balanced crankshafts. 3,808,745, Cl. 51-3.000.

Beloit Corporation: *See*—
Skinner, David L., 3,809,133.

Bement, Elmore L.: *See*—
Sievenpiper, Frederick L.; and Bement, Elmore L., 3,809,536.

Bemsel, Walter; and Schreiner, Hermann, to Porsche, Dr.-Ing. H.c.F., KG. Electrical control circuit for a central warning light of motor vehicles. 3,810,086, Cl. 340-52.00f.

Bender, Harry. Disposable dental implement. 3,809,103, Cl. 132-93.000.

Bender, Lloyd F. Rotatable spray nozzle assembly. 3,809,317, Cl. 239-251.000.

Bendix Corporation, The: *See*—
Eifler, Raymond J., 3,810,071.
Luchaco, David G., 3,809,028.

Beneditti, Albert L. Attachment for distributing rock dust. 3,809,439, Cl. 302-53.000.

Benjamin, John Stanwood, to International Nickel Company, Inc., The. Superalloys by powder metallurgy. 3,809,545, Cl. 75-.50r.

Bennet, Tom Joachim, to Morgardshammar Aktiebolag. Method and apparatus for cold drawing or rolling of metal wire rod. 3,808,864, Cl. 72-235.000.

Bennett Equipment Corporation: *See*—
Bennett, John E., 3,809,427.

Bennett, John E., to Bennett Equipment Corporation. Vehicle body mount. 3,809,427, Cl. 296-35.00r.

Bennett, Ronald W., to General Motors Corporation. Pressure balanced hydraulic brake booster. 3,808,817, Cl. 60-548.000.

Bennett, Stewart, to Polaroid Corporation. Emergency ejection system for automatic transparency processing and projection apparatus. 3,809,464, Cl. 352-74.000.

Bennett, William Frederick. Apparatus and method for measuring intelligence. 3,809,069, Cl. 128-2.10b.

Bennion, Don U.; and West, Leonard R., to Industrial Development & Design. Flaw detection system using microwaves. 3,810,005, Cl. 324-58.50a.

Beran, William G.: *See*—
Stock, W. Riley; Balsiger, Melvin M.; and Beran, William G., 3,809,888.

Berg, David A., to Allis-Chalmers Corporation. Hydraulic coupling. 3,809,122, Cl. 137-614.060.

Berg Mfg. & Sales Co.: *See*—
Klimek, Boleslaw, 3,809,441.

Berg, Winfred M. Transmission belt. 3,808,901, Cl. 74-231.00c.

Berkin, Harvey: *See*—
Cooper, Julius; and Berkin, Harvey, 3,808,730.

Berlat, Norman R., to Union Carbide Corporation. Process for making silicon metal. 3,809,571, Cl. 117-106.00a.

Berman, Arnold L.: *See*—
Wachs, Marvin Richard; Berman, Arnold L.; and Mahle, Christoph E., 3,810,255.

Berman, Irwin; Henschel, Robert; Pai, David H.; Nash, Charles F.; Mack, Anthony M.; and Alfano, Bernardino M., to Foster Wheeler Corporation. Apparatus for testing dimensional variations in a test specimen. 3,808,880, Cl. 73-90.000.

Berndt, Hans-Detlef: *See*—
Kerb, Ulrich; Wiechert, Rudolf; Eder, Ulrich; and Berndt, Hans-Detlef, 3,809,690.

Berney, Joseph C. Casing machine and method. 3,808,770, Cl. 53-47.000.

Berry, Jean-Luc, to Remy, E. P., et Cie. Method of aseptic packing a food product. 3,809,768, Cl. 426-309.000.

Bertea Corporation: *See*—
Henry, Augustus P., 3,809,502.

Bertilsson, Britt-Marie Elisabeth: *See*—
Mattsson, Ove Henning; and Bertilsson, Britt-Marie Elisabeth, 3,809,718.

Bertram, Leroy W.; Loomis, Russell M.; and Gaikowski, Michael D., to Unarco Industries, Inc. Carriage assembly for bulkheads. 3,808,982, Cl. 105-376.000.

Bertrand, Francois Robert, to Medial de Toledo & Cie. Method of treating diseases of the mucous membrane using compounds of a thiazolidine carboxylic acid and pharmaceutical preperations thereof. 3,809,754, Cl. 424-270.000.

Besancenot, Serge. Projector. 3,809,470, Cl. 353-113.000.

Besenfelder, Edward R., to Honeywell Information Systems Inc. Apparatus to detect phase encoded data being read from a data storage subsystem. 3,810,233, Cl. 360-42.000.

Bessiere, Pierre Etienne, to Precision Mecanique Labinal. Machine for fashioning the structures of flexible products, and products fashioned thereby. 3,809,199, Cl. 93-84.000.

Bessire, H. et J. J., S.A.: *See*—
Bessire, Jean-Jacques, 3,809,976.

Bessire, Jean-Jacques, to Bessire, H. et J. J., S.A. Method and apparatus for synchronizing a three phase motor. 3,809,976, Cl. 318-78.000.

Betterton, Bruce E.: *See*—
Cofer, Daniel B.; and Betterton, Bruce E., 3,809,902.

Betts, Kenneth H., to Construction Specialties, Inc. Floor mat. 3,808,628, Cl. 15-215.000.

Betts, Max William; and Robinson, Fran, to Courtaulds Limited. Knitting method. 3,808,841, Cl. 66-172.00r.

Beurer, Robert John; and Jeffery, Philip Auriol Edgar, to United Aircraft Corporation. Winch system for helicopter. 3,809,334, Cl. 242-158.300.

Beverly, William C., Jr.: *See*—
Emmons, Donald R.; and Beverly, William C., Jr., 3,809,922.

Bevilacqua, Frank: *See*—
Krawiec, Donald Michael; and Bevilacqua, Frank, 3,809,609.

Beyer, Lewis R. Loose-leaf binder construction. 3,809,485, Cl. 402-31.000.

Bhutani, Harish K.; Oda, Albert Y.; and Hughes, Ronald A., to Menasco Manufacturing Company. Missile repositioning system. 3,808,942, Cl. 89-1.800.

Biber, Conrad H., to Polaroid Corporation. Preferential power distribution system for battery powered camera having electronic flash unit. 3,810,212, Cl. 354-128.000.

Bibl, Klaus, to Lowell Technological Institute Research Foundation. Font of digital, or other, characters and method for pattern printing thereof. 3,810,095, Cl. 340-146.30a.

Bidwell, Robert E.; and Kurtz, Leonard D., to Deknatel, Inc., mesne. Surgical drainage system. 3,809,085, Cl. 128-275.000.

Biggs, Eugene S., to Dynapac Inc. Dispenser for flares and the like. 3,808,941, Cl. 89-1.50r.

Billarant, Patrick; Goubeau, Robert; and Langlois, Jacques, to Velcro France. Separable fastening sheet. 3,808,648, Cl. 24-204.000.

Birresborn, Gunter: *See*—
Drebes, Friedrich-Wilhelm; and Birresborn, Gunter, 3,809,619.

BK & K Enterprises, Inc.: *See*—
Bost, Charles H., 3,809,915.

Black and Decker Manufacturing Company, The: *See*—
Schrock, Martin Omer; and Burkholder, Robert Flohr, 3,808,676.

Black, Arthur L., to Ingersoll-Rand Company. Coupling means. 3,808,911, Cl. 74-597.000.

Black Body Corporation: *See—*
Wells, Harold D., 3,809,859.

Blackwell, James Brian; Killen, Dennis; and Hodgson, Victor Francis, to Unifoam A.G. Apparatus for the continuous production of strands of polymeric foam. 3,809,512, Cl. 425-4.00c.

Blair, David E., to Du Pont de Nemours, E. I., and Company. Capillary viscometer. 3,808,877, Cl. 73-55.000.

Blancett, Thomas B. Pipe crimping attachment. 3,808,870, Cl. 72-413.000.

Blanyer, Carl G., to Abex Corporation. Precision constant speed control for variable speed prime mover. 3,810,251, Cl. 290-40.000.

Blaschke, Anthony J. Kitchen accessory for automobiles. 3,809,425, Cl. 296-22.000.

Blau K.G. Fabrik fur Kraftfahrzeugteile: *See—*
Blau, Werner; and Gerdes, Theo, 3,809,282.

Blau, Werner; and Gerdes, Theo, to Blau K.G. Fabrik fur Kraftfahrzeugteile. Closure cover with pressure relief means. 3,809,282, Cl. 220-44.00r.

Bleeker, Raymond A., to Westinghouse Electric Corporation. Multiple height space divider system and connector assembly therefor. 3,809,142, Cl. 160-135.000.

Blewitt, Donald D., to Westinghouse Electric Corporation. High voltage current limiting fuse including heat removing means. 3,810,063, Cl. 337-166.000.

Blezard, Robert C.; and Millard, William E., to Smithfield Fibers, Inc. Three-strand yarn knitting machine and method of knitting. 3,808,840, Cl. 66-87.000.

Bloedorn, Arthur R., to Hewlett-Packard Company. Phase lock loop for locking on highest amplitude signal. 3,810,036, Cl. 331-15.000.

Blore, James H.; and Balcombe, Bobby L., to Phillip Fibers Corporation. Double knit fabric. 3,808,843, Cl. 66-196.000.

BMR Security Products Corporation: *See—*
Walters, Russell W., 3,808,850.

Bobeck, Andrew Henry, to Bell Telephone Laboratories, Incorporated. Integrated bubble expansion detector and dynamic guard rail arrangement. 3,810,132, Cl. 340-174.0eb.

Bobeck, Andrew Henry; and Danylchuk, Irynej, to Bell Telephone Laboratories, Incorporated. Magnetic domain replicator arrangement. 3,810,133, Cl. 340-174.0tf.

Bocchimuzzo, Anthony: *See—*
Haugsjaa, Paul O.; Heller, Adam; Nelson, William F.; and Bocchimuzzo, Anthony, 3,809,828.

Bocher, Dominique; and Faure, Robert. Pharmaceutical composition for treating mental fatique containing arginine-potassium phospho citro glutamate and method of using the same. 3,809,759, Cl. 424-317.000.

Bodensteiner, Robert J.: *See—*
Malone, Harold L.; and Bodensteiner, Robert J., 3,810,214.

Bodine, Albert G. Pile driving utilizing standing wave vibrations. 3,808,820, Cl. 61-53.500.

Boehmer, Matthew A., to BASF Wyandotte Corporation. Automotive cooling systems. 3,809,152, Cl. 165-51.000.

Boehner, Beat: *See—*
Dawes, Dag; and Boehner, Beat, 3,809,701.

Boeing Company, The: *See—*
Manca, Michael E.; and Drinnon, Robert H., 3,809,178.

Boekkooi, Anton; and Westerveld, Willem, to U.S. Philips Corporation. Closed reflector provided with incandescent lamp. 3,809,942, Cl. 313-113.000.

Boersma, Robert Paul; Mendicino, Frank Dominic; and Omietanski, George Michael, to Union Carbide Corporation. Process for producing silazane compounds. 3,809,713, Cl. 260-448.20e.

Boggs, Weldon C., to Food Research & Equipment Company. Liquid heating tank with safety control. 3,809,858, Cl. 219-331.000.

Boicey, James H.; Mattimoe, Paul T.; and Schmoeger, Otto J., Jr., to Libbey-Owens-Ford Company. Laminated windshield with built-in antenna. 3,810,184, Cl. 343-713.000.

Boisserand, Raymond. Device for the connection of cylindrical members. 3,809,413, Cl. 285-348.000.

Bolt Associates, Inc.: *See—*
Chelminski, Stephen V., 3,808,822.
Chelminski, Stephen V., 3,808,823.

Bond, Herbert M.; and Ring, Charles E., to Buckbee-Mears Company. Electroforming apparatus including an anode housing with a perforate area for directing ion flow towards the cathode. 3,809,642, Cl. 204-275.000.

Bonds, James Vaull; and McCaskill, John Walton, to Rockwell International Corporation. Well completion apparatus and method. 3,809,158, Cl. 166-250.000.

Bonnel, Arthur John, Sr., to Digitec, Inc. Clamping device. 3,808,915, Cl. 81-5.10r.

Bonnet, Frederick W., to Union Carbide Corporation. Rotary fluid contactor. 3,809,375, Cl. 261-87.000.

Bookwalter, George N., to United States of America, Agriculture. Method for preparing a liquid iron-fortifying composition. 3,809,773, Cl. 426-380.000.

Booth, Jack J., to Branch, William C. Stadium filler. 3,809,292, Cl. 222-146.00c.

Bopp & Reuther GmbH: *See—*
Pfundstein, Karl; and Fallert, Erich, 3,809,361.

Borders, Bert: *See—*
Rivkowich, Harold; Rehman, Warren C.; Knapp, William; and Borders, Bert, 3,809,769.

Borg-Warner Corporation: *See—*
Hoppesch, Joseph P., 3,809,067.

Borie, Robert: *See—*
Carbonnel, Henri; and Borie, Robert, 3,809,497.

Bosch, Robert, G.m.b.H.: *See—*
Burkel, Rainer; and Scheyhing, Hans, 3,809,956.
Daumueller, Hans; and Kretschmer, Heinz, 3,809,880.
Gotsch, Dieter; Hahner, Reinhard; Kirn, Manfred; and Lederer, Hans, 3,808,904.
Knapp, Heinrich; and Schwartz, Reinhard, 3,809,036.
Linder, Ernst; Adalbert, Gerhard; and Hess, Juergen, 3,809,511.
Sauer, Joseph, 3,808,903.
Scheidel, Wolfgang; and Steinmann, Helmut, 3,809,151.

Bosje, Jan. Purifying plant for sewage. 3,809,242, Cl. 210-195.000.

Bost, Charles H., to BK & K Enterprises, Inc. Electrical power delay and cutout circuit. 3,809,915, Cl. 307-10.0at.

Bott, Frank Bouckley, to British Steel Corporation. Industrialised building structure. 3,808,755, Cl. 52-92.000.

Bottini, Michael Lucien, to Monsanto Company. Opto-isolator devices and method for the fabrication thereof. 3,808,673, Cl. 29-577.000.

Bottjer, Richard E.; Johnson, Delp W.; Poole, William F.; and Storm, James P., to Johnson, Delf W., Poole & Storm, Architects. Folding contoured wall. 3,808,754, Cl. 52-70.000.

Bouniot, Albert. Process for producing alkoxy aldehydes. 3,809,722, Cl. 260-602.000.

Bourg, Haden J., Jr.; and Nicholson, James F.; deceased (by Cromwell, Roy D.; administrator), to Westinghouse Electric Corporation. Photoemitter structure including porous layer of photoemissive material. 3,809,941, Cl. 313-94.000.

Boushek, Sidney Joseph, Jr.: *See—*
Bass, Merlyn Duane; and Boushek, Sidney Joseph, Jr., 3,808,781.

Bowen, Edward Valentine; and Simkins, Derek, to GKN Transmissions Limited. Joint structures in or for rotary shafts. 3,808,838, Cl. 64-27.0nm.

Bower, Clayton G. Tractor hoist. 3,809,367, Cl. 254-144.000.

Bowers, George L., to General Motors Corporation. Gearing with vibration damping means. 3,808,906, Cl. 74-443.000.

Bowman, Cader E.; and Lapins, Daniel W., to Olin Corporation. Collapsible camp stove. 3,809,054, Cl. 126-38.000.

Bowman, E. W., Incorporated: *See—*
Bowman, Edward W. (Bowman, Murial B., and Bowman, Michael Edward, executors of said Bowman, Edward Woodrow, assors. to), 3,809,544.

Bowman, Edward W., Bowman, Murial B., and Bowman, Michael Edward, executors of said Bowman, Edward Woodrow, assors. to Bowman, E. W., Incorporated. Method and apparatus for heating, annealing, tempering, decorating and handling glassware. 3,809,544, Cl. 65119.000.

Boyd, James V.: *See—*
Taylor, Edwin K.; and Boyd, James V., 3,809,320.

Boyle, Marian F.: *See—*
Boyle, Robert G.; and Boyle, Marian F., 3,808,612.

Boyle, Robert G.; and Boyle, Marian F. Inflatable toilet seat. 3,808,612, Cl. 4-239.000.

Brabant, Omer E. Auto frame pulling apparatus. 3,808,866, Cl. 72-309.000.

Bracey, Kenneth Edward George: *See—*
Gilbert, Ronald Albert; Petrie, James Alexander; and Bracey, Kenneth Edward George, 3,808,913.

Bradford, Larry David: *See—*
Keener, Arthur; Bradford, Larry David; Gary, Laverne E.; McLeon, John W.; and Carter, Billy W., 3,808,958.

Bradshaw, Jennings H. Paint supplying apparatus for paint rollers. 3,809,484, Cl. 401-185.000.

Braginetz, Paul A. Mechanical geometric generator for trochoids employing a bi-linear radial co-ordinate system. 3,808,944, Cl. 90-15.00a.

Brambring, Dieter Ferdinand, to Moller, J. D., Optische Werke GmbH, Firma. Microsurgical operating unit. 3,809,454, Cl. 350-84.000.

Branch, William C.: *See—*
Booth, Jack J., 3,809,292.

Brandenburg, Wilson C., Jr. Electrical (H.V.) distributor cap contacts for spark ignited combustion engines. 3,810,074, Cl. 339-100.000.

Brandt, Edison R., to Polaroid Corporation. Flash cube adapter. 3,809,878, Cl. 240-1.300.

Branson, Charles D., to Robertshaw Controls Company. Fuel control system and pressure regulator construction therefor and method for operating the same. 3,809,313, Cl. 236-15.00a.

Bratland, Arthur O. T. Method for the production of foodstuffs in the form of powders. 3,809,765, Cl. 426-358.000.

Braun Aktiengesellschaft: *See—*
Cobarg, Claus Christian; and Schindler, Hans, 3,808,741.
Engelstatter, Heinz, 3,809,954.

Bravo, Ricardo; and Street, I. C. Holder. 3,809,351, Cl. 248-210.000.

Bredehorn, Friedrich; and Doge, Heinz, to Rheinstahl Eggers-Kehrhahn GmbH. Safety arrangement for escalator handrails and the like. 3,809,206, Cl. 198-16.00r.

Breiling, Hans Georg; and Warnow, Detlef, to Dragerwerk, AG. Method and apparatus for mixing gases under pressure particularly for respirators and medical devices. 3,809,109, Cl. 137-88.000.

Breinlinger, Richard H.: *See—*
Villalobos, Luis F.; Harano, Allen A.; and Breinlinger, Richard H., 3,809,868.

Brennan, James A., to Mobil Oil Corporation. Wide-temperature range ester lubricants. 3,809,652, Cl. 252-56.00r.

Brett, James E., to Purex Corporation, Ltd. High throughput filter having multiposition valve. 3,809,247, Cl. 210-278.000.

Briant, Bob B., to United States of America, Navy. Digital code translator apparatus. 3,810,154, Cl. 340-347.0dd.

Bridgestone Tire Company Limited: *See—*
Tateisi, Tamotu; Ueda, Shigeo; and Kuwabara, Masayoshi, 3,809,128.

Brinly-Hardy Co., Inc.: *See—*
Doering, Charles W.; and Smith, Samuel W., 3,808,627.

British Aircraft Corporation: *See—*
Cook, Ronald; Guppy, John Reginald; and Howells, John D., 3,810,027.

British Steel Corporation: *See—*
Bott, Frank Bouckley, 3,808,755.

Britz, Galen C.: *See—*
Peterson, Arthur H.; and Britz, Galen C., 3,809,442.

Broadbent, Carl D.: *See—*
Michaelson, Stanley D.; and Broadbent, Carl D., 3,809,430.

Brock, James Donald, to CMI Corporation. Asphalt preparation plant. 3,809,373, Cl. 259-154.000.

Bron Elektronik AG: *See—*
Haberthur, Walter, 3,809,968.

Broner, Hans J.: *See—*
Doll, Henri Georges; and Broner, Hans J., 3,809,070.

Brown Boveri & Company Limited: *See—*
Baer, Jurgen; Sommer, Dieter; and Toplak, Ernst, 3,809,934.
Oberle, Arthur, 3,809,126.

Brown, Christopher Robert; George, Terence Malcolm; and Norton, David John, to Westinghouse Brake and Signal Company, Limited. Static relaying circuit. 3,809,930, Cl. 307-311.000.

Brown Company: *See—*
Vanderlugt, Thomas, Jr., 3,809,310.

Brown, Dale G.: *See—*
Hays, John D.; Baswell, Harlen L.; Combs, Jerry A.; and Brown, Dale G., 3,809,989.

Brown, Francis L. Rapid transit system. 3,808,979, Cl. 104-131.000.

Brown, Preston R. Telephone alarm signalling system. 3,809,813, Cl. 179-5.00r.

Brown, Ronald E.; and Oakes, James A., to General Motors Corporation. Method of making contact bumps on flip-chips. 3,809,625, Cl. 204-15.000.

Brown, William B.; and Campbell, Gregory A., to General Motors Corporation. Interrupted current electrodeposition of paints. 3,809,634, Cl. 204-181.000.

Brown, William Keith; and Stanback, Harris I., to Square D Company. Ground current powered ground fault protector. 3,809,962, Cl. 317-18.00d.

Brown, Woodrow I. Portable traffic delineator. 3,809,007, Cl. 116-63.00p.

Bruan, Oskar J., to Xerox Corporation. Reproduction machine fuser assembly. 3,809,861, Cl. 219-469.000.

Bruce, George Brebber: *See—*
Hutchinson, Royal Edward; and Bruce, George Brebber, 3,808,766.

Bruckner, Hermann: *See—*
Kral, Rudolf; and Bruckner, Hermann, 3,809,016.

Bruhlet, Paul; and Quillet, Gerard, to Compagnie Francaise de Raffinage and Wendel-Sidelor. Injection of liquid fuels into shaft furnaces. 3,809,524, Cl. 431-181.000.

Brumlik, George C. Multi-element self-gripping channel. 3,808,646, Cl. 24-87.00r.

Brunner, Heinrich, to Maschinenfabrik Wifag. Device for guiding printed paper webs from a printing machine. 3,809,303, Cl. 226-197.000.

Brunsch, Gunter, to Siemens Aktiengesellschaft. Optoelectric signal coupler. 3,810,034, Cl. 330-59.000.

Brunswick Corporation: *See—*
Lanpheer, Richard A., 3,808,807.
Morgan, Edward J., 3,809,027.

Bruski, Richard Scott: *See—*
Lewis, Clifford Jackson; and Bruski, Richard Scott, 3,809,547.

Bryant, Robert G.: *See—*
Neunherz, Herbert W.; and Bryant, Robert G., 3,809,414.

Bryjak, Edmunt: *See—*
Lesniak, Chryzant; and Bryjak, Edmunt, 3,809,377.

Buan, Danilo P., to Velo-Bind, Inc. Hand operated multiple die punch. 3,808,933, Cl. 83-588.000.

Buchmuller, Josef: *See—*
Muncke, Ludwig; Buchmuller, Josef; and Stieler, Konrad, 3,808,949.

Buckbee-Mears Company: *See—*
Bond, Herbert M.; and Ring, Charles E., 3,809,642.
Stene, Ronald M., 3,809,626.

Buhrke, Rolfe E.: *See—*
Chang, Gregory I.; Buhrke, Rolfe E.; Rice, Verner K.; and Mele, John J., 3,810,121.

Bulharowski, John Francis, to GTE Sylvania Incorporated. Film frame position detector. 3,809,807, Cl. 178-7.200.

Bullai, Carl N.: *See—*
Krutsinger, Jack K.; Bullai, Carl N.; and Munson, Robert E., 3,810,183.

Bunker Ramo Corporation: *See—*
Coppola, John, 3,809,838.
Metzinger, Leonard L., 3,808,905.

Burger, Hans, to Fischer, Georg, Aktiengesellschaft. Tension supervisory apparatus for conveyor transport systems detecting breakage or malfunction in a cable or the like. 3,809,832, Cl. 200-61.180.

Burgers, August. Frame for covering a wall break-through intended to receive a door or the like. 3,808,758, Cl. 52-212.000.

Burk, Robert L.; and Hotchkiss, Jack G. Coolant heated oven for use with vehicle engines. 3,809,059, Cl. 126-19.500.

Burke, William R.; McCall, Frank S.; Clark, Kenneth G.; De Pass, Ernest T.; and Friend, William H., to Union Camp Corporation. Method and apparatus for the continuous manufacture of collapsible cellular partitions. 3,809,593, Cl. 156-257.000.

Burkel, Rainer; and Scheyhing, Hans, to Bosch, Robert, G.m.b.H. Apparatus for electrical determination of differential speed of two rotating members. 3,809,956, Cl. 317-6.000.

Burkholder, Robert Flohr: *See—*
Schrock, Martin Omer; and Burkholder, Robert Flohr, 3,808,676.

Burlington Industries, Inc.: *See—*
Avery, William L., 3,810,101.

Burns, David C.: *See—*
Murray, Thomas R.; and Burns, David C., 3,809,607.

Burpee, Lee E.; and Paynter, Donald A. Detection system. 3,810,172, Cl. 343-5.0pd.

Burr, Robert C.: *See—*
Fanta, George F.; and Burr, Robert C., 3,809,664.

Burroughs Corporation: *See—*
Eisenberg, Mark F.; and Harmon, William J., Jr., 3,809,952.

Burson, Bob O.; and Phelon, Russell Dale, to Phelon, R. E., Company, Inc. Ignition triggering circuit with automatic advance. 3,809,040, Cl. 123-148.00e.

Busch, Gerhard. Machine for squeeze drying washed ink rollers. 3,808,966, Cl. 100-106.000.

Bush, John W.; and Pyrz, Edmund J., to American Home Products Corporation. Lower calorie candy. 3,809,756, Cl. 426-201.000.

Butler, Walter J.; and Puckette, Charles McD., to General Electric Company. Recirculation mode analog bucket-brigade memory system. 3,810,126, Cl. 340-173.0rc.

Buttaravoli, Philip M. E-Med Corporation Resuscitator. 3,809,079, Cl. 128-145.700.

Buttriss, Albert T., to Eaton Corporation. Liquid level monitor. 3,808,887, Cl. 73-293.000.

Buzga, Ondrej: *See—*
Rosberg, Frantisek; Linda, Josef; Buzga, Ondrej; Dusek, Miloslav; and Cvetler, Jiri, 3,808,749.

Byers, Donald W.; Petry, Chester H., Jr.; Nordstrom, Carl G.; and Hensley, James Carl, to Byers Photo Equipment Company. Punch-out film mount. 3,808,722, Cl. 40-152.000.

Byers Photo Equipment Company: *See—*
Byers, Donald W.; Petry, Chester H., Jr.; Nordstrom, Carl G.; and Hensley, James Carl, 3,808,722.

Byram, George W., to United States of America, Navy. Apparatus for the generation of Bessel function signals. 3,809,876, Cl. 235-197.000.

Calabrese, Anthony J.; Stettler, Wayne J.; and Zwiren, Jan Marie, to Menley & James Laboratories, Ltd. Color selector device. 3,809,785, Cl. 35-28.300.

California Microwave, Inc.: *See—*
Lance, Drew R., 3,810,046.

Calspan Corporation: *See—*
Weatherston, Roger C., 3,808,835.

Cam-Fram Tool Co., Inc.: *See—*
Franz, Robert W.; and Zielnicki, John J., 3,810,057.

Cameron, Ian Lewis, to Cefilac Compagnie du Filage des Metaux et des Joints Curty. Hydraulic presses. 3,808,859, Cl. 72-31.000.

Cammack, Thomas A.; Donahue, William J.; and Gratton, Peter D., to United States of America, Navy. Dual function bomb. 3,808,972, Cl. 102-7.200.

Camp, Harold E.; and Grier, John D., to Owens-Illinois, Inc. Data printer. 3,810,198, Cl. 354-12.000.

Campbell, Gregory A.: *See—*
Brown, William B.; and Campbell, Gregory A., 3,809,634.

Campbell, Richard D. Series of shirt cuff assemblies. 3,808,605, Cl. 2-123.000.

Canada Packers Limited: *See—*
Khouw, Boen Tie; and Kesler, Johan Peter, 3,809,748.

Canadian Marconi Company: *See—*
Kwong, Michael, 3,809,877.

Canadian Patents and Development Limited: *See—*
Faurschou, Donald K.; Misener, Donald C.; Pope, James C.; and Hadden, Richard, 3,809,639.

Cane, Albert: *See—*
Shapero, Wallace H.; and Cane, Albert, 3,809,661.

Canfield, Russell, to Tuflok, Inc. Chain-type door fastening device. 3,809,418, Cl. 292-264.000.

Cannon Kabushiki Kaisha: *See—*
Sakaguchi, Keiichi; and Hirata, Noritsugu, 3,810,200.

Canon Denishi Kabushiki Kaisha: *See—*
Hasagawa, Tachio, 3,810,244.

Canon Kabushiki Kaisha: *See—*
Hasagawa, Tachio, 3,810,244.
Sakaguchi, Keiichi; Someya, Atsushi; and Hirata, Noritsugu, 3,810,206.
Taguchi, Tatsuya, 3,809,330.
Taguchi, Tatsuya; and Yazaki, Mutsunobu, 3,810,228.

Canron, Inc.: *See—*

Stewart, John Kenneth, 3,808,976.
Caplan, David. Portable bidet. 3,808,608, Cl. 4-7.000.
Capozza, Richard Carl: *See*—
Schmitt, Edward Emil; and Capozza, Richard Carl, 3,809,616.
Carbonnel, Henri; and Le Frere, Jean-Paul, to Groupement Atomique Alsocienne Atlantique. Installation for the treatment and movement of liquid metals. 3,809,379, Cl. 266-34.00v.
Carbonnel, Henri; and Borie, Robert, to Groupement Atomique Alsacienne Atlantique. Conduction pump for conveying corrosive metals. 3,809,497, Cl. 417-50.000.
Cardwell, Paul H.: *See*—
Kane, William S.; and Cardwell, Paul H., 3,809,624.
Carlson, Harold C. R. Spring tester. 3,808,885, Cl. 73-161.000.
Carlsson, Mats, to Aktiebolaget Svenska Flaktfabriken. Device for fastening a bearing in a construction made of plate or structural steel. 3,808,661, Cl. 29-200.00p.
Carmichael, Eldon W., to Doorcraft Inc. Door frame assembly and door frame section thereof. 3,808,759, Cl. 52-212.000.
Carnes, James Edward: *See*—
Duffy, Michael Thomas; and Carnes, James Edward, 3,809,574.
Carothers, William F., to Wilson Industries, Inc. Positive rotation cleanout apparatus and method. 3,809,161, Cl. 166-301.000.
Carpenter, James W.; Mee, John D.; and Heseltine, Donald W., to Eastman Kodak Company. Novel cyanine dyes with fused imidazols nuclei. 3,809,691, Cl. 260-240.00e.
Carpentier, John H.; and Rose, Frederick A., to Joerns Furniture Company. Electric hospital bed. 3,808,613, Cl. 5-63.000.
Carr, Harry A. Magnetic keeper accessory for wrench sockets. 3,808,918, Cl. 81-125.000.
Carrier Corporation: *See*—
Pilarczyk, Karol, 3,809,493.
Carter, Billy W.: *See*—
Keener, Arthur; Bradford, Larry David; Gary, Laverne E.; McLeon, John W.; and Carter, Billy W., 3,808,958.
Carter, William M.: *See*—
Schillreff, George H.; Grayson, Lawrence E.; and Carter, William M., 3,808,940.
Cartledge, Charles F., to Jacobs Manufacturing Company, The. Rocker arm engine brake system. 3,809,033, Cl. 123-90.460.
Case, J. I., Company: *See*—
Harding, Ray S., 3,809,118.
Casperson, John H.; and Tsilibes, George N., to Xerox Corporation. Printing apparatus employing stepping motor control system. 3,810,189, Cl. 346-74.0es.
Castro, Rodolfo; and Toscano, Esteban J. Method of material holding and smoke removal for a laser cutter. 3,808,672, Cl. 29-559.000.
Cataldo, Roy S., to General Motors Corporation. Dual combustion engine and cycle. 3,808,818, Cl, 60-620.000.
Cato Oil and Grease Co.: *See*—
Park, Wayne Austin; and Oswalt, Leon Marvin, 3,809,280.
Cave, Gordon Milford, to Coplastix Limited. Valve. 3,809,119, Cl. 137-527.800.
Cefilac Compagnie du Filage des Metaux et des Joints Curty: *See*—
Cameron, Ian Lewis, 3,808,859.
Ceglie, Gaetano J.: *See*—
Jolly, Michael D.; Jasovsky, George A.; Ceglie, Gaetano J.; Nacci, Anthony T.; and Schechter, Harold, 3,809,770.
Celanese Corporation: *See*—
Vogelfanger, Elliot A.; and Nathanson, Bennett, 3,809,591.
Central Steel Works (Peterborough), Limited: *See*—
Csumrik, Joseph D., 3,809,278.
Centre Electronique Horloger, S.A.: *See*—
Vittoz, Eric Andre, 3,809,929.
Vittoz, Eric Andre, 3,810,006.
Ceskoslovenska Akademie Ved.: *See*—
Jarolim, Vaclav; Slama, Karel; and Sorm, Frantisek, 3,809,710.
Ceyrat, Bernard, to Etat Francais represente par le Ministre Charge de la Defense National Delegation Ministerielle pour l'Armement. Electrically actuated priming device. 3,809,964, Cl. 102-28.00r.
CFC Products, Inc.: *See*—
Cochran, Gary D.; Crosby, David A.; and Franken, Peter A., 3,809,886.
Chabon, Irwin. Intrauterine contraceptive device. 3,809,076, Cl. 128-130.000.
Chamberlain, James D.: *See*—
Szalanczy, Andras; Shrader, Erwin F.; Shoffner, Bruce M.; and Chamberlain, James D., 3,809,901.
Chance, A. B., Company: *See*—
Hubbard, David G., 3,810,060.
Chandross, Edwin Arthur; Fork, Richard Lynn; Kaminow, Ivan Paul; and Tomlinson, Walter John, III, to Bell Telephone Laboratories, Incorporated. Transparent media capable of photoinduced refractive index changes and their application to light guides and thelike. 3,809,686, Cl. 260-89.50a.
Chandross, Edwin Arthur; Pryde, Carolie Anne; Tomlinson, Walter John, III; and Weber, Heinz Paul, to Bell Telephone Laboratories Incorporated. Photo-locking technique for producing integrated optical circuits. 3,809,732, Cl. 264-22.000.
Chang, Gregory I.; Buhrke, Rolfe E.; Rice, Verner K.; and Mele, John J., to GTE Automatic Electric Laboratories, Incorporated. Timing generator cirucit for central data processor of digital communication system. 3,810,121, Cl. 340-172.500.
Chang, Tao-Yuan; and Wood, Obert Reeves, II, to Bell Telephone Laboratories, Incorporated. Tunable infrared molecular lasers optically pumped by a hydrogen-bromide laser. 3,810,042, Cl. 331-94.500.
Channell, Glen L., to Hydraulics Unlimited Manufacturing Co. Scissor frame assembly. 3,809,429, Cl. 298-17.00s.
Chao, Kwei C., to Standard Oil Company. Enzymic degradation of nucleic acids in SCP materials. 3,809,776, Cl. 426-431.000.
Chaplin, Arthur H.: *See*—
Hershberg, David E.; Chaplin, Arthur H.; and Dewland, Joseph F., 3,810,038.
Chappell, Albert R., to Metalife Company, The. Dispenser having air vent clean-out. 3,809,293, Cl. 222-148.000.
Chappelle, Warner A.; and Stead, Jerry A. Garment bags. 3,809,194, Cl. 190-41.00b.
Charland, Telesphore L.: *See*—
Seetoo, Winston R.; Weide, Roman K.; and Charland, Telesphore L., 3,808,670.
Chase, Russell C. Apparatus for drawing ellipses. 3,808,691, Cl. 33-30.00g.
Chase-Shawmut Company, The: *See*—
Kozacka, Frederick J., 3,810,062.
Salzer, Erwin, 3,810,061.
Salzer, Erwin, 3,810,077.
Chatanier, Michel Jean; Leynaert, Jacky Robert; and Thiriot, Alain Roger. Hygrometer. 3,808,888, Cl. 73-336.500.
Chayka, George A.; Persson, Eric J.; and Ziobro, Norbert M., to Western Electric Company, Incorporated. Test probe for semiconductor devices. 3,810,016, Cl. 324-158.00p.
Chelminski, Stephen V., to Bolt Associates, Inc. Process and system for increasing load-bearing capacity of soil. 3,808,822, Cl. 61-63.000.
Chelminski, Stephen V., to Bolt Associates, Inc. Process and system for increasing load-bearing capacity of soil. 3,808,823, Cl. 61-63.000.
Chemische Werke Huls Aktiengesellschaft: *See*—
Kriestan, Wolfgang; and Heinz, Scholten, 3,809,678.
Chen, Wen-Sieh: *See*—
Liu, Hsing-Ching, 3,809,107.
Cherubim, Justin Lawrence, to Mechanical Technology Incorporated. Hydrodynamic foil bearings. 3,809,443, Cl. 308-9.000.
Chevron Research Company: *See*—
Fries, Bernard A., 3,809,898.
Hotten, Bruce W., 3,809,648.
Kemp, Jacob D.; and Mulaskey, Bernard F., 3,809,728.
Chezem, Jimmie A. Occupant safeguarding door stop. 3,809,419, Cl. 292-338.000.
Chick, Orest Nicholas; and Means, Graham Neville, to Polymer Corporation Limited. Compositions of polymeric materials. 3,809,666, Cl. 260-29.70d.
Chida, Shinpei: *See*—
Ogawa, Shimeo; Shinozaki, Koji; and Chida, Shinpei, 3,809,203.
Chierici, Osvaldo F.; and Winters, Frederick, to Holland Company. Coupler positioning device for sliding sill cushion underframe cars. 3,809,251, Cl. 213-15.000.
Chmela, John F.: *See*—
Fohrman, Seymour F.; and Chmela, John F., 3,809,311.
Cho, Boong Y.; Sturkol, Elmer W.; and Wier, Keith E., to Industrial Nucleonics Corporation. Radiation gauge. 3,809,903, Cl. 250-358.000.
Choate, William Clay: *See*—
Ewing, William Steele, Jr.; Ellis, Thomas Walter; and Choate, William Clay. 3,810,162.
Choay S.A.: *See*—
Thely, Maurice H., 3,809,760.
Chordas, Joseph L. Compression splice for electrically coupling electrical conductors. 3,810,078, Cl. 339-268.00r.
Chough, Euiwon; Deverse, Frank T.; Konrad, Franz; Kurtz, John A.; and Manchester, Russell C., to Cogar Corporation. Mounting block for semiconductor wafers. 3,809,050, Cl. 125-35.000.
Chow, Yut. Fastening device. 3,808,645, Cl. 24-71.0sk.
Christiansen, Henning: *See*—
Palma, Joseph; and Christiansen, Henning, 3,809,231.
Christiansen, James O., to Avery Products Corporation. Baggage tag-and-check device for airlines and the like. 3,808,718, Cl. 40-2.00r.
Chromalloy American Corporation: *See*—
Mal, M. Kumar; and Tarkan, Stuart E., 3,809,540.
Chromy, Franz, to Palar (Curacao) N.V. Expansion dowel construction. 3,808,938, Cl. 85-83.000.
Chrysler Corporation: *See*—
Florence, Dennis E.; Winders, Frank R., Jr.; and Wontrobski, Charles E., 3,810,089.
Chubb, John Norman; and Sinton, Ernest Kennedy, to United Kingdom Atomic Energy Authority. Display systems. 3,809,948, Cl. 315-27.0gd.
Chun, Sun W.; Hamilton, Harry A.; and Montagna, Angelo A., to Gulf Research & Development Company. Oxidative sweetening of hydrocarbons with a calcined catalyst containing copper, iron and oxygen. 3,809,643, Cl. 208-191.000.
Churan, Roy G., to Vulcan Plastics, Inc. Reusable plastic snap-on closure. 3,809,284, Cl. 220-60.00r.
Church, Donald E.: *See*—
Davis, Henry, Jr.; and Church, Donald E., 3,810,090.
Ciaffone, Charles P., to CPC Engineering Corporation. Process for conveyance of ash. 3,809,436, Cl. 302-20.000.
Cianciolo, Alfred D.; Sabatine, Donald J.; and Trotz, Samuel I., to Olin Corporation. Mercury containing aluminum hydride composition and process of making. 3,809,587, Cl. 149-109.000.

Ciba-Geigy AG: *See—*
Abel, Heinz, 3,809,532.
Porret, Daniel; and Fatzer, Willy, 3,809,696.
Wick, Arnold, 3,809,705.

Ciba-Geigy Corporation: *See—*
Dawes, Dag; and Boehner, Beat, 3,809,701.
Habermeier, Jurgen; Porret, Daniel; and Baumann, Dieter, 3,809,660.

Cimber, Hugo S. Aspirator needle injector. 3,809,095, Cl. 128-347.000.

Cinquanta, Alain: *See—*
Duthion, Louis; Coyotte, Claude Charles; Seguela, Claude Jean-Marie; Barthelemy, Gabriel; Cinquanta, Alain; and Drapeau, Yves, 3,809,372.

Citizen Watch Company Limited: *See—*
Nikaido, Akira; Onda, Mitsuo; Machida, Takayasu; Nakajima, Fumio; and Yanagawa, Yoshihiki, 3,808,792.

Ciurea, Serban, 20% to Lee, Raymond, Organization, Inc., The. Combination cup cooler and warmer. 3,808,825, Cl. 62-3.000.

Clancey, Stephen M., to Eaton Corporation. Viscous coupling. 3,809,197, Cl. 192-58.00b.

Clanton, John S., to International Telephone and Telegraph Corporation. Electro-optical transmission line. 3,809,908, Cl. 250-551.000.

Clark, Kenneth G.: *See—*
Burke, William R.; McCall, Frank S.; Clark, Kenneth G.; De Pass, Ernest T.; and Friend, William H., 3,809,593.

Clarke, Robert L.; and Van Dyk, Gerk Gerry, to Atomic Energy of Canada Limited. Method for non-destructive densitometric measurement of small volumes inside irregularly shaped non-uniform objects. 3,809,904, Cl. 250-358.000.

Clayton, Benjamin; and Thurman, Benjamin H. Tobacco smoke filter. 3,809,097, Cl. 131-10.700.

Clementi, Anacleto; and Battini, Roberto, to Snam Progetti, S.p.A. Process for the polymerization of olefine at high pressure in tubular reactors. 3,809,688, Cl. 260-94.90r.

Clifton, Clyde J.: *See—*
Dobson, Richard D., Sr.; and Clifton, Clyde J., 3,809,505.

Clouse, Leland Francis, 20% to Lee, Raymond, Organization, Inc., The. Low voltage warning system. 3,810,144, Cl. 340-248.00c.

C.M. Systems, Incorporated: *See—*
Oeming, Joseph A.; Heffrom, Allan J.; and Estry, Arthur L., 3,808,653.

CMI Corporation: *See—*
Brock, James Donald, 3,809,373.

Coaker, Antony W. M.; and Cowell, Elmer E., to Monsanto Company. Lubricated thermoplastic resin compositions. 3,809,667, Cl. 260-31.80r.

Cobarg, Claus Christian; and Schindler, Hans, to Braun Aktiengesellschaft. Operating means for electro-mechanically ignited lighters. 3,808,741, Cl. 431-256.000.

Cobb, Douglas R.: *See—*
Walker, Walter P.; Cobb, Douglas R.; and Cofer, Frank H., Jr., 3,809,810.

Cochran, Gary D.; Crosby, David A.; and Franken, Peter A., to CFC Products, Inc. Dynamic tomography with movable table. 3,809,886, Cl. 250-323.000.

Cofer, Daniel B.; and Betterton, Bruce E., to Southwire Company. Method and apparatus for detecting incipient short circuit conditions in electrolytic cells. 3,809,902, Cl. 250-338.000.

Cofer, Frank H., Jr.: *See—*
Walker, Walter P.; Cobb, Douglas R.; and Cofer, Frank H., Jr., 3,809,810.

Cogar Corporation: *See—*
Chough, Euiwon; Deverse, Frank T.; Konrad, Franz; Kurtz, John A.; and Manchester, Russell C., 3,809,050.

Cohen, Aaron G.: *See—*
Gay, Derek J.; Smedley, William H.; Cohen, Aaron G.; Dworkin, Darryl R.; Nuttall, Michael W.; and Wilson, Nicol S., 3,808,732.

Cohen, Eli. Sun visor accessory. 3,809,428, Cl. 296-97.00c.

Cohen, Julius; Edelman, Seymour; and Vezzetti, Carol F., to United States of America, Navy. Polymeric pyroelectric detector. 3,809,920, Cl. 307-88.0et.

Colgate-Palmolive Company: *See—*
Elkind, Vincent T.; Hunter, Robert T.; Marder, Herman L.; and Hutchinson, Homer F., 3,809,663.

Colgate-Polmolive Company: *See—*
Gerecht, John Fred, 3,809,659.

Collet, Peter Jacobus, to Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek ten behoeve van Nijverheid. Centrifugal compressor. 3,809,499, Cl. 417-78.000.

Collins, Byron R.; and McVey, Charles I., to General Electric Company. High intensity discharge lamp electrode. 3,809,943, Cl. 313-217.000.

Collins, Johnny, to Zenith Radio Corporation. Digital to analog converter television tuning of varactor tuners. 3,810,022, Cl. 325-459.000.

Collins Radio Company: *See—*
Hattendorf, Edwin R., 3,809,867.
Hungerford, Laurence D.; and Marshall, Clarence G., 3,810,100.
Melvin, William J., 3,809,821.
Stephens, Raymond A., 3,809,819.
Stover, Harris A., 3,810,018.

Collmann GmbH & Co. Spezialmaschinenbau KG: *See—*
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Colt Industries Operating Corporation: *See—*
Bell, Oliver A., Jr., 3,809,847.
Bell, Oliver A., Jr., 3,809,848.

Columbia Broadcasting System Inc.: *See—*
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Columbia Gas System Service Corporation: *See—*
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Combe Incorporated: *See—*
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Combs, Jerry A.: *See—*
Hays, John D.; Baswell, Harlen L.; Combs, Jerry A.; and Brown, Dale G., 3,809,989.

Combustion Engineering, Inc.: *See—*
Krawiec, Donald Michael; and Bevilacqua, Frank, 3,809,609.

Comer, William Timmey: *See—*
Martin, Tellis Alexander; and Comer, William Timmey, 3,809,697.

Commercial Affiliates, Inc.: *See—*
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Commissariat a l'Energie Atomique: *See—*
Poujois, Robert, 3,810,031.

Commonwealth of Australia, The, % Secretary Department of Supply, The: *See—*
Metcalfe, Kenneth A.; and Smith, Ian E., 3,810,193.

Communications Satellite Corporation: *See—*
Wachs, Marvin Richard; Berman, Arnold L.; and Mahle, Christoph E., 3,810,255.
Wilkinson, Ernest J., 3,810,185.

Compagnie Francaise de Raffinage: *See—*
Bruhlet, Paul; and Quillet, Gerard, 3,809,524.
Duthion, Louis; Coyotte, Claude Charles; Seguela, Claude Jean-Marie; Barthelemy, Gabriel; Cinquanta, Alain; and Drapeau, Yves, 3,809,372.

Compere, Newton L. Rupturable blister pill package with safety backing. 3,809,221, Cl. 206-461.000.

Compu-Sort Systems, Inc.: *See—*
Vulcano, Vincent N., 3,808,931.

Comstron Corporation: *See—*
Basse, Philip, 3,810,015.

Comtec Economation, mesne: *See—*
Beaver, William D.; and Lewis, Herbert O., 3,808,752.

Congoleum Industries, Inc.: *See—*
Palmer, Leon B., 3,809,534.

Connell, Kenneth Percy, to National Cash Register Company. Method of employing a soluble matrix to maintain a plurality of objects in a fixed relationship. 3,808,668, Cl. 29-423.000.

Connett, Hugh H., to Ucote Corporation, mesne. Article for the finishing of leather. 3,809,597, Cl. 161-39.000.

Connors, John J. Gage control method and system for tandem rolling mills. 3,808,857, Cl. 72-8.000.

Connors, John J.; Dolphin, Thomas J.; and Cook, John W. Gage control system and method for tandem rolling mills. 3,808,858, Cl. 72-8.000.

Considine, Kevin T.: *See—*
Baker, Thompson A.; Balsiger, Melvin M.; Considine, Kevin T.; and Litsjo, Herbert E., 3,809,899.

Construction Specialties, Inc.: *See—*
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Container Bins, Inc.: *See—*
Mayers, Gerald K., 3,809,264.

Continental Can Company, Inc.: *See—*
Kehe, Alfred W., 3,809,283.

Continental Oil Company: *See—*
Wiseman, Minor R.; and Schoreder, Rondon L., 3,810,007.
Young, Gary C.; and Ferrell, Howard H., 3,809,159.

Continental Scale Corporation: *See—*
Hutchinson, William Y.; and Kushmuk, Walter P., 3,808,694.
Hutchinson, William Y.; and Kushmuk, Walter P., 3,809,171.

Cook, Eugene B., to Allis-Chalmers Corporation. Gyratory crusher with external dynamic balancing assembly. 3,809,324, Cl. 241-210.000.

Cook, Galen B. Tongue extender. 3,809,094, Cl. 128-321.000.

Cook, John W.: *See—*
Connors, John J.; Dolphin, Thomas J.; and Cook, John W., 3,808,858.

Cook, Kenneth J., to Beaumont, William, Hospital. Centrifuge speed control. 3,809,982, Cl. 318-313.000.

Cook, Robert G.: *See—*
Groth, Clarence N.; Hempel, James N.; Wieczorek, Robert A.; Meyer, Charles F.; and Cook, Robert G., 3,809,965.

Cook, Robert G., to Square D Company. Solid state timing circuit. 3,809,970, Cl. 317-141.00s.

Cook, Ronald; Guppy, John Reginald; and Howells, John D., to British Aircraft Corporation. Signal Processing method and apparatus. 3,810,027, Cl. 328-129.000.

Cooper, Edward Frank. Transmission unit. 3,808,899, Cl. 74-203.000.

Cooper, Julius; and Berkin, Harvey, to Ideal Toy Corporation. Toy oven. 3,808,730, Cl. 46-1.00r.

Cooper, Robert J.; and Dozier, Homer A. Ground anchor for mobile homes. 3,808,756, Cl. 52-156.000.

Cope, James R.; and McCully, Everette R., to International Business Machines Corporation. Field and armature control in a reel motor servomechanism. 3,809,328, Cl. 242-184.000.

Coplastix Limited: *See—*
Cave, Gordon Milford, 3,809,119.

Copper Range Company: *See—*

Pulsifer, Verne, 3,809,148.

Coppola, John, to Bunker Ramo Corporation. Modular push button switch assembly mounted on printed circuit board. 3,809,838, Cl. 200-159.00r.

Cornell-Dubilier Electric Corporation: *See*—
Leister, Edwin S.; Kovach, George F.; and Robinson, William m. (said Robinson assor. to), 3,810,252.

Corning Glass Works: *See*—
De Luca, Robert D., 3,810,068.

Corretore, Daniel A., Jr.: *See*—
Ulbing, Cynthia G.; and Corretore, Daniel A., Jr., 3,809,561.

Cosden Oil & Chemical Company: *See*—
Allison, Birt, Jr.; Daniels, Calvin L.; and Moss, James H., Jr., 3,809,687.

Costa, Giacomo; and Mestroni, Giovanni, to Snam Progetti S.p.A. Process for photochemical and thermal production of cobalt complexes. 3,809,632, Cl. 204-158.00r.

Costain, Winston; and Matthews, Vincent. Polyamids. 3,809,670, Cl. 260-37.00n.

Cotter, Mitchell A.: *See*—
Nadler, Bernard David; and Cotter, Mitchell A., 3,810,106.

Cotterell, Robert Frederick Joseph. Method of molding heat-expandable thermo-plastic polymeric resinous granules involving enhanced distribution of the hot gaseous medium in the mold cavity. 3,809,735, Cl. 264-51.000.

Coulter Electronics, Inc.: *See*—
Coulter, Wallact H.; and Hogg, Walter R., 3,810,011.

Coulter, Wallact H.; and Hogg, Walter R., to Coulter Electronics, Inc. Apparatus and method for analyzing the particle volume distribution for a plurality of particles of different size in a quantity of liquid. 3,810,011, Cl. 324-17.0cp.

Cournoyer, Roger J. A. Three-way screw driver. 3,809,136, Cl. 145-50.00r.

Courtaulds Limited: *See*—
Betts, Max William; and Robinson, Fran, 3,808,841.

Cowell, Elmer E.: *See*—
Coaker, Antony W. M.; and Cowell, Elmer E., 3,809,667.

Coyotte, Claude Charles: *See*—
Duthion, Louis; Coyotte, Claude Charles; Seguela, Claude Jean-Marie; Barthelemy, Gabriel; Cinquanta, Alain; and Drapeau, Yves, 3,809,372.

CPC Engineering Corporation: *See*—
Ciaffone, Charles P., 3,809,436.

Crabtree, Clarence, to Fedders Corporation. Dishwasher with improved spray apparatus. 3,809,106, Cl. 134-176.000.

Cragoe, Edward J., Jr.: *See*—
Schultz, Everett M.; and Cragoe, Edward J., Jr., 3,809,721.

Craig, Robert T. Security device for doors. 3,809,417, Cl. 292-259.000.

Crane, Arthur T., to Xerox Corporation. Dual cord interlock. 3,809,916, Cl. 307-18.000.

Crank, George, to Lilly Industries Ltd. Certain 2-oxazolylthioureas as fungicides. 3,809,755, Cl. 424-272.000.

Crankshaft Machine Company: *See*—
Oeming, Joseph A.; Heffrom, Allan J.; and Estry, Arthur L., 3,808,653.

Craver, Albert F., to Aurora Corporation of Illinois. Burner cap assembly. 3,809,055, Cl. 126-39.00h.

Crawford, Wheeler C.; Godfrey, Arthur W.; and Reid, Robert E., to Texaco Inc. Lubricating oil containing an alkylmercaptosuccinimide. 3,809,651, Cl. 252-47.500.

Crawley, William B.: *See*—
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Creative Logic Corporation: *See*—
Renzo, Peter C., 3,809,894.

Crees, Silas Ray. Apparatus for drawing conductor wires through conduits. 3,809,366, Cl. 254-134.3ft.

Crescent Insulated Wire & Cable Company, Inc.: *See*—
Pearson, Stanley, 3,809,802.

Crickmer, Charles D. Adjustable tongs. 3,809,424, Cl. 294-113.000.

Cromwell, Roy D.: *See*—
Bourg, Haden J., Jr.; and Nicholson, James F., 3,809,941.

Crosby, David A.: *See*—
Cochran, Gary D.; Crosby, David A.; and Franken, Peter A., 3,809,886.

Croslin, Michael E., to Grumman Data Systems Corporation. Dispensing apparatus. 3,809,296, Cl. 222-309.000.

Crouch, Donald W., to General Electric Company. Vacuum-type electric circuit interrupter. 3,809,836, Cl. 200-144.00b.

Crowley, Lee Francis; Presky, Dennis Robert; and Missenda, Andrew Michael, to RCA Corporation. Automatic squelch tail eliminator for tone coded squelch systems. 3,810,023, Cl. 325-478.000.

Crown Zellerback Corporation: *See*—
Kendall, Burt C., 3,809,223.

Csumrik, Joseph D., to Central Steel Works (Peterborough), Limited. Collapsible shipping container. 3,809,278, Cl. 220-4.00f.

Csuros, Zoltan; and Petro, Jozsef, to Magyor Tudomanyos Akademia. Process for the preparation of Raney-metal catalysts having high activity. 3,809,658, Cl. 252-472.000.

Culp, Stuart David, to General Electric Company. Memory bit drive circuitry providing common terminating impedance to a sense line. 3,810,134, Cl. 340-174.0pw.

Cuprak, Thomas. Snap plate for football. 3,809,399, Cl. 273-55.00r.

Curley, John L.: *See*—
Nibby, Chester M.; Manton, John C.; and Curley, John L., 3,809,884.

Cvetler, Jiri: *See*—
Rosberg, Frantisek; Linda, Josef; Buzga, Ondrej; Dusek, Miloslav; and Cvetler, Jiri, 3,808,749.

Daeuble, Manfred; Greif, Norbert; and Fikentscher, Rolf, to Badische Anilin-& Soda-Fabrik Aktiengesellschaft. Sulfonated phenol ethers. 3,809,717, Cl. 260-512.00r.

Dahlquist, James E.; and Medal, Richard J., to Rauland-Borg Corporation. Private automatic telephone system with dial and dialless telephones. 3,809,824, Cl. 179-37.000.

Daido Metal Company Ltd.: *See*—
Morisaki, Nobukazu, 3,809,551.

Daimler-Benz AG: *See*—
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Dale Electro-Systems, Incorporated: *See*—
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D'Alfonso, Nunzio: *See*—
Meurer, Siegfried; Emmerling, Wolfram; and D'Alfonso, Nunzio, 3,809,031.

Dalmasso, Claudio, to Olivetti, Ing. C., & C., S.p.A. Terminal leads for integrated circuit package and method for producing a frame of said leads. 3,808,679, Cl. 29-625.000.

Damodaran, Nandyelath; Moffatt, John; Jones, Gordon; and Howarth, George, to Syntex (U.S.A.) Inc. Synthetic polyoxin type nucleosides and methods of preparing. 3,809,689, Cl. 260-211.50r.

Damon Corporation: *See*—
Kosowsky, David I., 3,809,068.

Dana Corporation: *See*—
Young, Richard N., 3,809,038.

Daniels, Calvin L.: *See*—
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Danylchuk, Irynej: *See*—
Bobeck, Andrew Henry; and Danylchuk, Irynej, 3,810,133.

Dassler, Adolf. Running sole of flexible synthetic material for sports shoes. 3,808,713, Cl. 36-32.000.

Dau, Paul, & Co.: *See*—
Wick, Henning, 3,809,972.

Daumueller, Hans; and Kretschmer, Heinz, to Bosch, Robert, G.m.b.H. Illuminating unit for use on motor vehicles. 3,809,880, Cl. 240-8.200.

Dautsch, Ralph, to Nippon Gakki Seizo Kabushiki Kaisha. Computor organ using parallel processing. 3,809,788, Cl. 84-1.010.

Dautsch, Ralph, to Nippon Gakki Seizo Kabushiki Kaisha. Computor organ using harmonic limiting. 3,809,789, Cl. 84-1.010.

Dautsch, Ralph, to Nippon Gakki Seizo Kabushiki Kaisha. Implementation of combined footage stops in a computor organ. 3,809,790, Cl. 84-1.010.

Dautsch, Ralph, to Nippon Gakki Seizo Kabushiki Kaisha. Production of celeste in a computor organ. 3,809,792, Cl. 84-1.240.

Davenport, Richard Waldron, to Uniroyal, Inc. Reaction product of 2-vinyl-5-norbornone with hexahalocyclopentadienes. 3,809,725, Cl. 260-648.00c.

Davidson, Morris J.: *See*—
Nick, Charles F.; and Davidson, Morris J., 3,808,882.

Davies, Anthony Roger, to Plessey Handel und Investments A.G. Flow-control arrangements in axial-cylinder pumps. 3,808,950, Cl. 91-487.000.

Davis, Henry, Jr.; and Church, Donald E., to Avco Corporation. Pneumatic tire low pressure monitoring and warning system. 3,810,090, Cl. 340-58.000.

Davis, Paul; and Shore, David N., to Sweetheart Plastics, Inc. Disposable plastic dish. 3,809,236, Cl. 206-519.000.

Davison, Robert W.: *See*—
Fantini, Ralph S.; and Davison, Robert W., 3,809,590.

Davolos, Dominick D.; Denker, Jerry B.; and Davolos, Phillip A. Method and means for the detection and identification of low level components of the electrocardiogram complex without loss of reference to the higher level components. 3,809,071, Cl. 128-2.06.

Davolos, Phillip A.: *See*—
Davolos, Dominick D.; Denker, Jerry B.; and Davolos, Phillip A., 3,809,071.

Dawes, Dag; and Boehner, Beat, to Ciba-Geigy Corporation. Triazolylphosphonic and phosphoric esters. 3,809,701, Cl. 260-308.00r.

Dawson, Samuel G.: *See*—
Fowler, Charles F.; and Dawson, Samuel G., 3,809,228.

De Bondt, Leon: *See*—
Denis, Englebert; and De Bondt, Leon, 3,809,469.

De Lanauze, Jacques. Die sawing machine. 3,808,934, Cl. 83-747.000.

De Lorenzo, Joseph F.: *See*—
Reed, Joseph; and De Lorenzo, Joseph F., 3,809,815.

De Luca, Robert D., to Corning Glass Works. Impedance element with magnesium reaction terminal contact and method. 3,810,068, Cl. 338-274.000.

De Montgolfier, Arnaud: *See*—
Salet, Simone; and De Montgolfier, Arnaud, 3,809,909.

De Moude, Adrian J. Pin attachment means for surgical bow. 3,809,074, Cl. 128-84.00r.
De Nora, Oronzio; and De Nora, Vittorio, to De Nora, Oronzio, Impianti Elettrochimici S.p.A. Electrolysis cell with permeable valve metal anode and diaphragms on both the anode and cathode. 3,809,630, Cl. 204-98.000.
De Nora, Oronzio, Impianti Elettrochimici S.p.A.: *See*—
De Nora, Oronzio; and De Nora, Vittorio, 3,809,630.
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De Nora, Vittorio: *See*—
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De Pass, Ernest T.: *See*—
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De Voy, David D.; Barlow, George J.; and Klashka, John A., to Honeywell Information Systems, Inc. Noise record processing for phase encoded data. 3,810,231, Cl. 360-40.000.
Dean, John K., Jr. Rotary power translation machine. 3,809,022, Cl. 123-8.190.
Deaton, David W., to Deaton Medical Company, mesne. Sterile liquid entraining system. 3,809,080, Cl. 128-194.000.
Deaton Medical Company, mesne: *See*—
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Kane, William S.; and Cardwell, Paul H., 3,809,624.
Deere & Company: *See*—
Bass, Merlyn Duane; and Boushek, Sidney Joseph, Jr., 3,808,781.
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Hook, Richard Wyane; and Jackson, William Wayne, 3,809,164.
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Muncke, Ludwig; Buchmuller, Josef; and Stieler, Konrad, 3,808,949.
Sutherland, Gail Russell; Leonard, Ronald Keith; and Hoeksema, Joe Henry, 3,808,783.
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Deknatel, Inc., mesne: *See*—
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Del Laboratories, Inc.: *See*—
Farrari, Luigi M., 3,809,226.
Del Norte Technology, Inc.: *See*—
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Delaney, Glenn Allen, Jr.; and Jones, Robert Wayne, to Dresser Industries, Inc. Exhaust muffler for pneumatic tools. 3,809,179, Cl. 181-36.00a.
Delbag-Luftfilter Gesellschaft mit beschrankter Haftung: *See*—
Neumann, Gerhard Max; and Wittemeier, Hans-Joachim (said Neumann assor. to), 3,808,777.
Delisle, Jules; and Baillargeon, Victor, to Universite de Sherbrooke. System for conducting automatically an audiometric test. 3,809,811, Cl. 179-1.00n.
Delligatti, Patrick. Biased return coding drum. 3,808,970, Cl. 101-35.000.
Delvecchio, George D., to Xerox Corporation. Developer seal. 3,809,012, Cl. 118-637.000.
Denbilt Corporation: *See*—
Dennis, Clement O.; and Everhardt, William Franklin, 3,809,592.
Denis, Englebert; and De Bondt, Leon, to GAF Corporation. Slide carrier cycling mechanism for optical projectors and the like. 3,809,469, Cl. 353-106.000.
Denker, Jerry B.: *See*—
Davolos, Dominick D.; Denker, Jerry B.; and Davolos, Phillip A., 3,809,071.
Dennis, Clement O.; and Everhardt, William Franklin, to Denbilt Corporation. Process and apparatus for retreading tires. 3,809,592, Cl. 156-394.000.
Desbois, Roger J. Foot shield for cyclists. 3,808,910, Cl. 74-594.600.
Deseret Pharmaceutical Company, Inc.: *See*—
Loveless, James C., 3,809,081.
Desmarchais, Walter F.: *See*—
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Deuschle, Fritz: *See*—
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Deutsch, Daniel H. Method of supporting a hot oil pipeline through permafrost. 3,809,149, Cl. 165-1.000.
Deutsch, Ralph, to Deutsch Research Laboratories, Ltd. Computor organ. 3,809,786, Cl. 84-1.010.
Deutsch Research Laboratories, Ltd.: *See*—
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Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See*—
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Deutsche Golf-und Silbert-Scheideanstalt vormals Roessler: *See*—
Udluft, Klaus; Weigert, Wolfgang; Offermanns, Heribert; and Wagner, Hans, 3,809,716.
Deutsche Vergaser Gesellschaft m.b.H. & Co., K.G.: *See*—
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Deverse, Frank T.: *See*—
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Dewhirst, Donald R.: *See*—
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Dewland, Joseph F.: *See*—
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DHJ Industries, Inc.: *See*—
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Pipa, William J., 3,808,733.
Diehl: *See*—
Stutzle, Dietmar; and Widner, Peter F., 3,808,975.
Diepeveen, John C. Die frame support with heater element. 3,809,860, Cl. 219-385.000.
Dieterich, Peter D.: *See*—
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Dieterich, Peter D.; Eiszner, William H., Jr.; and Locke, John P., said Locke and said Eisgner assors. to said Dieterich, Peter D. Apparatus for operating a pressure gauge or the like. 3,808,891, Cl. 73-407.00r.
Dietert, Harry W., to Dietert, Harry W., Co. Apparatus for and method of granular material testing. 3,808,881, Cl. 73-93.000.
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Bonnel, Arthur John, Sr., 3,808,915.
DiLaura, Ercole Thomas. External waste pipe support stand for trailers. 3,809,348, Cl. 248-49.000.
DiMeo, Frank N., to Academic Associates, Inc. Computer terminal plotting apparatus and method. 3,809,865, Cl. 235-151.000.
Dini, Mamiliano, to European Rotogravure Association. Method for sensing the depth of cellular pits formed in a material layer. 3,808,878, Cl. 73-67.80s.
Dobbs, Wallace C. Method and apparatus for manufacturing stuffed and sealed mailing packages. 3,808,768, Cl. 53-31.000.
Dobby Laboratories, Inc.: *See*—
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Dobner, Reinhold; Willenbacher, Erich; and Baus, Wolfgang, to Pfaff Industriemaschinen GmbH. Sewing machine with differential feed. 3,808,995, Cl. 112-209.000.
Dobras, Bruce W., to Manarch Marking Systems Company, The. Optical reader. 3,809,893, Cl. 250-227.000.
Dobry, Reuven, to Tetley Inc., mesne. Infusion package. 3,809,215, Cl. 206-.500.
Dobson, Richard D., Sr.; and Clifton, Clyde J., to McGraw, Ron J. Bitumen pumping apparatus. 3,809,505, Cl. 417-424.000.
Dodd, Paul D.; Lynott, John J.; and Treder, John D., to International Business Machines Corporation. Continuously movable information storage and retrieval systems. 3,809,263, Cl. 214-16.40r.
Doering, Charles W.; and Smith, Samuel W., to Brinly-Hardy Co., Inc. Bag carrying structure. 3,808,627, Cl. 15-83.000.
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Dolgy, Andrei Emelyanovich; Balandin, Jury Mikhailovich; Shelepchikov, Viktor Vasilievich; and Shutov, Vladimir Ivanovich. Devices for mounting an engine on an aircraft pylon. 3,809,340, Cl. 244-54.000.
Doll, Henri Georges; and Broner, Hans J., to Doll Research, Inc. Non-invasive electromagnetic bloodflow measuring system with rejection of noises. 3,809,070, Cl. 128-2.05f.
Doll Research, Inc.: *See*—
Doll, Henri Georges; and Broner, Hans J., 3,809,070.
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Donnelly Mirrors, Inc.: *See*—
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Donnelly Mirrors, Incorporated: *See*—
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Dove, Ralph E. Earth working blade with saw teeth. 3,809,135, Cl. 144-34.00f.

Dow Chemical Company, The: *See—*
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Downey, Rogers B., to Polaroid Corporation. Motion picture processing and projection system employing multi-purpose cassette. 3,809,104, Cl. 134-122.000.

Downing, Thomas P., to Acme Conveyor Company, Inc. Machines for picking a single sheet of material from a stack. 3,809,388, Cl. 271-20.000.

Dowty Fuel Systems Limited: *See—*
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Doyel, John S. Molding die block. 3,809,356, Cl. 249-155.000.

Dozier, Homer A.: *See—*
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Dracket Company, The: *See—*
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Drebes, Friedrich-Wilhelm; and Birresborn, Gunter, to Otto, C., Dr., & Comp. G.m.b.H. Combined wet and dry quenching. 3,809,619, Cl. 201-39.000.

Drella, Charles L.; Fineo, Carlo; Jenssen, Lloyd W.; and Scott, William, Jr., to Johns-Manville Corporation. Inverting and reversing conveyor. 3,808,771, Cl. 53-118.000.

Dresser Industries, Inc.: *See—*
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Nick, Charles F.; and Davidson, Morris J., 3,808,882.

Drevici, Noe: *See—*
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Drevici, Ulla; and Drevici, Noe. Process for the complete utilization of cocoa fruits. 3,809,778, Cl. 426-481.000.

Dreyer, Heinz, to Amazonen-Werke, H. Dreyer,. Machine for the distribution of granulated and powdered materials. 3,809,316, Cl. 239-167.000.

Drinnon, Robert H.: *See—*
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Driscoll, Kendall L.: *See—*
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Druseikis, Frederick, to General Motors Corporation. Actuating mechanism for a depressed park windshield wiper system. 3,808,629, Cl. 15-250.170.

Du Pont de Nemours, E. I., and Company: *See—*
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Ferguson, Billy George, 3,808,924.
McMunn, Charles William, III; and Nakayama, Takashi, 3,809,797.

Duchateau, Georges F., to Raffinerie tirlemontoise. Rotary countercurrent solid-liquid extraction apparatus. 3,809,538, Cl. 23-269.000.

Duffy, Michael Thomas; and Carnes, James Edward, to RCA Corporation. Aluminum oxide films for electronic devices. 3,809,574, Cl. 117-201.000.

Dufrene, Alex. Tubing plug. 3,809,157, Cl. 166-185.000.

Dunegan, Ronald G.: *See—*
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Dunlop Holdings Limited: *See—*
Haines, Robert C.; Barrett, John E.; and Stevens, Eric H., 3,809,402.

Dunn, Nelson H.: *See—*
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Dunning, Walter B.; Endter, Dale S.; and McDonald, William G., to Eastman Kodak Company. Light-tight cartridge for containing sheet material. 3,810,229, Cl. 354-281.000.

Duralac Chemical Corporation: *See—*
Leister, Edwin S.; Kovach, George F.; and Robinson, William m. (said Leister and said Kovach assors. to), 3,810,252.

Durand Machine Company, Ltd.: *See—*
Hards, John E., 3,808,925.

Durichen, Horst, to Deutsche Vergaser Gesellschaft m.b.H. & Co., K.G. Speed regulator for an internal combustion engine. 3,809,034, Cl. 123-102.000.

Durr, Helmut: *See—*
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Rosberg, Frantisek; Linda, Josef; Buzga, Ondrej; Dusek, Miloslav; and Cvetler, Jiri, 3,808,749.

Duthion, Louis; Coyotte, Claude Charles; Seguela, Claude Jean-Marie; Barthelemy, Gabriel; Cinquanta, Alain; and Drapeau, Yves, to Compagnie Francaise de Raffinage. Device for the generation of ultrasonics and their application to the preparation of emulsios. 3,809,372, Cl. 259-4.000.

Dworcan, Manfred: *See—*
Lieb, Solomon Nathan, 3,810,146.

Dworkin, Darryl R.: *See—*
Gay, Derek J.; Smedley, William H.; Cohen, Aaron G.; Dworkin, Darryl R.; Nuttall, Michael W.; and Wilson, Nicol S., 3,808,732.

Dynapac Inc.: *See—*
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Eagle Electric Mfg. Co., Inc.: *See—*
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Eallonardo, Charles M., to Varian Associates. Method of fabricating a traveling wave tube. 3,808,677, Cl. 29-600.000.

Eastener Corporation: *See—*
Wandel, Oscar A.; and Mullaney, Frank, 3,809,307.

Eastman Kodak Company: *See—*
Adamski, Henry S.; and Kindig, Guilford E., 3,810,210.
Carpenter, James W.; Mee, John D.; and Heseltine, Donald W., 3,809,691.
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Kurtz, Clark Nelson; and De Palma, James John, 3,809,457.
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Merrill, Stewart H.; and Olson, James R., 3,809,554.
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Ulbing, Cynthia G.; and Corretore, Daniel A., Jr., 3,809,561.

Eastmen Kodak Company: *See—*
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Eaton Corporation: *See—*
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Clancey, Stephen M., 3,809,197.
Moran, Thomas M.; and Paskert, Joseph H., 3,808,635.

Ebdon, Ronald William, to Perry, E. S., Limited. Rocking pendulum. 3,808,793, Cl. 58-130.00r.

Ebeling, Dorothy J.: *See—*
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Baumgardner, John D.; and Ebeling, Dorothy J., 3,809,462.

Eber, Nicolas, to Aktiengesellschaft Electrolux. Absorption refrigeration apparatus. 3,808,834, Cl. 62-490.000.

Ecker, Frank A.: *See—*
Hoffmeyer, Knud H.; Haffner, Donald G.; and Ecker, Frank A., 3,808,778.

Eckhardt, Hellmuth; and Sauerbier, Reiner. Combined radial axial bearing. 3,809,444, Cl. 308-174.000.

Economy Color Card Co. Inc.: *See—*
Ackerman, Don; and Grossman, Martin, 3,808,710.

Ecos Corporation: *See—*
Portoulas, Peter G., 3,810,003.

Eddy, John W.; and Puccini, Sergio E., to GTE Automatic Electric Laboratories, Incorporated. Communication switching system interlock arrangement. 3,809,822, Cl. 179-18.00e.

Edelman, Seymour: *See—*
Cohen, Julius; Edelman, Seymour; and Vezzetti, Carol F., 3,809,920.

Eder, Ulrich: *See—*
Kerb, Ulrich; Wiechert, Rudolf; Eder, Ulrich; and Berndt, Hans-Detlef, 3,809,690.

Edet, Hakon: *See—*
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Edson, Gwynne I.; and Reynolds, Keith R., to GTE Sylvania Incorporated. Gold alloy plating process and solution. 3,809,628, Cl. 204-43.00g.

Edwards, John W.; and Tull, Herbert G., III, to Hoerner Waldorf Corporation. Bag bale. 3,809,235, Cl. 206-499.000.

Ehlichmann, Merlin W., to West Creek Co., Inc. Afterburner construction. 3,808,987, Cl. 110-8.00a.

Ehni, George J., III, to Texas Instruments, Incorporated. Low power DC-DC converter employing intermittent bursts of blocking oscillations. 3,809,994, Cl. 321-2.000.

Ehret, Yale W.; and Anderson, Russell O., to Adams & Westlake Company, The. Window. 3,808,742, Cl. 49-413.000.

Eichin, Harry P.: *See—*
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Eidsmo, Jacob: *See—*
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Eifler, Raymond J., to Bendix Corporation, The. Rear release contact retention assembly. 3,810,071, Cl. 339-59.00m.

Eisenberg, Mark F.; and Harmon, William J., Jr., to Burroughs Corporation. Apparatus reducing the power required for scanned display devices. 3,809,952, Cl. 315-169.0tv.

Eiszner, William H., Jr.: *See—*
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Electro-Craft Corporation: *See—*
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Electroprint, Inc., mesne: *See—*
Pressman, Gerald L.; and Kittredge, Thomas D., 3,809,556.
Pressman, Gerald L.; and Kittredge, Thomas D., 3,809,557.

Elkind, Vincent T.; Hunter, Robert T.; Marder, Herman L.; and Hutchinson, Homer F., to Colgate-Palmolive Company. Textile sizing, water and oil repellent composition. 3,809,663, Cl. 260-17.4st.

Elliott, David Robert; and Greenway, John Michael. Treatment of yarns. 3,808,652, Cl. 28-1.400.

Elliott, Robert L. Shoe sole protector. 3,808,712, Cl. 36-7.300.

Ellis, Thomas Walter: *See—*
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Elsing, John W. Safety release apparatus. 3,809,369, Cl. 254-173.00r.

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Emberson, John Ernest. Drain fitting. 3,809,411, Cl. 285-42.000.
Emco (Great Britain) Limited: *See—*
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Emmerling, Wolfram: *See—*
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Emmons, Donald R.; and Beverly, William C., Jr. System for monitoring and controlling substances in fluid bodies. 3,809,922, Cl. 307-118.000.
Endo, Kunio: *See—*
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Matsuo, Shunji; Sato, Shui; Endo, Takaya; Kasai, Keiji; and Inoue, Izaburo, 3,808,945.
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Energiagazdalkodsi Intezet: *See—*
Heller, Laszlo; Szucs, Laszlo; and Szabo, Zoltan, 3,808,775.
Engelke, Roger P.; and Zille, Marvin H., to Barber-Colman Company. Self-powered variable volume air damper control. 3,809,314, Cl. 236-49.000.
Engelke, Wilhelm; and Purr, Gerhard, to Kraftwerk Union Aktiengesellschaft. Steam turbine installation. 3,808,819, Cl. 60-690.000.
Engelstatter, Heinz, to Braun Aktiengesellschaft. Electronic flash unit with automatic flash termination of increased reliability. 3,809,954, Cl. 315-241.000.
England, Alfred W., to Xerox Corporation. Computer input-output system. 3,810,105, Cl. 340-172.500.
Erdman, Jurgen; and Knappe, Hartmut, to Sick, Erwin. Beam scanning object detection system. 3,809,891, Cl. 250-222.00r.
Erdmenger, Rudolf; Ullrich, Martin; and Hederich, Manfred, to Bayer Aktiengesellschaft. Concentration of materials. 3,809,140, Cl. 159-2.00r.
Erixon, Karl Erich Samuel, to Gunnebo Bruks Aktiebolag, mesne. Cartridge magazine for power tools. 3,808,723, Cl. 42-6.000.
Ernst, Richard Robert, to Varian Associates. Nuclear magnetic resonance spectroscopy employing difference frequency measurements. 3,810,001, Cl. 324-.50r.
Ersek, Robert A.; Wall, Donald E.; and Garity, Michael C., to Med General Inc. Sterile sheath apparatus for fiber optic illuminator with compatible lens. 3,809,072, Cl. 128-23.000.
Erwin, Robert Dale, to Mallory, P. R., & Co. Inc. Means preventing continued rotation in a wrong-way direction of rotating member. 3,809,932, Cl. 310-41.000.
Esashi, Hanjiro, to Sony Corporation. Tape cassette. 3,809,219, Cl. 206-55.00k.
ESB Incorporated: *See—*
Venuto, C. Joseph, 3,809,579.
Eskeli, Michael. Heat and steam generator. 3,809,017, Cl. 122-11.000.
Esser, Leonard Jan Maria, to U.S. Philips Corporation. Transversal filter. 3,809,923, Cl. 307-221.00d.
Esso Production Research Company: *See—*
Ilfrey, William T.; and Sheffield, James R., 3,809,170.
Esso Production Research Corporation: *See—*
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Estes, Phillip Waite, to Riegel Textile Corporation. Process for forming a fluffed fibrous pulp batt. 3,809,604, Cl. 162-100.000.
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Oeming, Joseph A.; Heffrom, Allan J.; and Estry, Arthur L., 3,808,653.
Etablissements Minet: *See—*
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Dini, Mamiliano, 3,808,878.
Euverard, Maynard R., to Velten & Pulver, Inc. Converging and diverging conveyor. 3,809,207, Cl. 198-34.000.
Evans, Anthony C., to Kelsey-Hayes Company. Disk type parking brake. 3,809,190, Cl. 188-722.000.
Evans, James D.: *See—*
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Evans, Lee L., to Texas Instruments, Incorporated. Integrated structure amplifier with thermal feedback. 3,809,928, Cl. 307-303.000.
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Evertz, Egon; and Seybold, Rolf, to Evertz, Egon. Method of repairing cracked iron chills. 3,808,667, Cl. 29-402.000.
Ewing, William Steele, Jr.; Ellis, Thomas Walter; and Choate, William Clay, to Texas Instruments Incorporated. Nonlinear classification recognition system. 3,810,162, Cl. 340-172.500.
Exact Weight Scale Co., Inc.: *See—*
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Exhibit Homes, Inc.: *See—*
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Eyelet Specialty Company: *See—*
Landen, William James, 3,809,276.
Fa. Kleinewefers Industrie Companie GmbH: *See—*
Lopata, Karl Peter, 3,808,845.
Fabre, Pierre; Giroud-Garampon, Robert; Gondrand, Michel; and Grenoble, Fernand Raymond, to Tunzini Ameliorair, Thermique, Aeraulique,. Apparatus for the surface coating of objects. 3,809,011, Cl. 118-635.000.
Factory Mutual Research Corporation: *See—*
Herbello, Mario, 3,809,112.
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Fallert, Erich: *See—*
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Fanta, George F.; and Burr, Robert C., to United States of America, Agriculture. Method of preparing starch graft polymers. 3,809,664, Cl. 260-17.4gc.
Fantini, Ralph S.; and Davison, Robert W., to Porter, H. K., Company, Inc. Jet engine starter hose and method of making it. 3,809,590, Cl. 156-149.000.
Farkas, Istvan: *See—*
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Farr, Glyn Phillip Reginald, to Girling Limited. Brake adjusters. 3,809,189, Cl. 188-71.900.
Farrari, Luigi M., to Del Laboratories, Inc. Display package for cosmetics. 3,809,226, Cl. 206-229.000.
Farrell, John J., to Farrell Patent Company. Extrusion die for blowing plastic film. 3,809,515, Cl. 425-133.000.
Farrell Patent Company: *See—*
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Fatzer, Willy: *See—*
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Faure, Robert: *See—*
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Faurschou, Donald K.; Misener, Donald C.; Pope, James C.; and Hadden, Richard, to Canadian Patents and Development Limited. Solid electrolyte compact for probe used in quantitative determination of gas dissolved in molten metal. 3,809,639, Cl. 204-195.00s.
Fauth, Guenter, to Agfa-Gevaert Aktiengesellschaft. Film transporting mechanism for still cameras. 3,810,219, Cl. 354-206.000.
Febrer, Carlos Ricci. Device for retaining buttons. 3,808,647, Cl. 24-108.000.
Feddern, Horst, to Fischer, Georg, Aktiengesellschaft. Method to control the moisture content of granular substances. 3,809,564, Cl. 106-38.900.
Fedders Corporation: *See—*
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Fehr & Reist AG: *See—*
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Feier, Gunter; Koch, Hansjorg; and Suchy, Walter, to Franz Morat GmbH. Store for band-shaped information carriers. 3,809,301, Cl. 226-205.000.
Fein, Harry. Methods and apparatus for generating random time intervals. 3,810,039, Cl. 331-78.000.
Feingold, Michael H., to Polaroid Corporation. Process for the preparation of 3-(3'-lower carboalkoxy-4' hydroxy naphthalidene) naphthalide. 3,809,704, Cl. 260-343.20r.
Feitlowitz, Robert D., to DHJ Industries, Inc. Method for finishing woven and nonwoven fabrics formed of polyester materials. 3,809,573, Cl. 117-138.80f.
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Fellow, David Frank: *See—*
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Ferguson, Billy George, to Du Pont de Nemours, E. I., and Company. Tubular assembly for cutting preumatically propelled filaments. 3,808,924, Cl. 83-199.000.
Ferguson, Howard, to Arrow Manufacturing Company, Inc. Display case. 3,809,216, Cl. 206-45.340.
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Ferguson, Robert E.; and Ferguson, Stuart R., 3,809,598.

Fergusson, Alexander H. B. Temperature responsive signaling device. 3,810,139, Cl. 340-229.000.

Ferrajuolo, Roberto Vincenzo: *See—*
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Ferrell, Howard H.: *See—*
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Fiat Societa per Azioni: *See—*
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Fikentscher, Rolf: *See—*
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Fikse, Alfred E. Golf miniature game and golfer. 3,809,404, Cl. 273-87.400.

Fineo, Carlo: *See—*
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Finike Italiana Marposs-Soc, In Accomandita Semplice de Mario Possati & C.: *See—*
Pozzetti, Mario; and Mordini, Claudio, 3,809,874.

Fink, Clyde H. Physical training system. 3,808,707, Cl. 35-29.00a.

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Finley, William W. Apparatus for the programmed treatment of bed wetting. 3,810,140, Cl. 340-235.000.

Finn, Burton C. Manually operated small boat drive. 3,809,006, Cl. 115-24.000.

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Fire Research Institute, Fire Defence Agency, Ministry of Home Affair: *See—*
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Fischer, Georg, Aktiengesellschaft: *See—*
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Fisher, Arthur I. Shaving system for extended blade life. 3,808,920, Cl. 83-22.000.

Fisher, Max; and Gardner, Paul S., to Old Colony Hosiery Mills, Inc. Manufacture of lady's panty hose. 3,808,842, Cl. 66-177.000.

Fishman, William H.; and Linscheer, Wilem G. Anti-obesity process. 3,809,752, Cl. 424-224.000.

Fitzwater, John Herman. Electric fail-safe actuator. 3,808,895, Cl. 74-2.000.

Flanagan, Lindley E., Jr. Spinner lure rig. 3,808,726, Cl. 43-42.130.

Flanagan, Robert M., to Amerace Esna Corporation. Resilient retainer system for pavement marker assembly. 3,809,487, Cl. 404-15.000.

Flanders, Robert D. Adjustable self-regulating trolling device. 3,808,727, Cl. 43-43.130.

Flanders, Robert D. Reusable container for bulk materials and other items. 3,809,304, Cl. 229-5.700.

Flashbacks, Inc.: *See—*
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Fleissner, Heinz, to Vepa AG. Apparatus for the continuous treatment of natural and synthetic fibers with a solvent. 3,808,846, Cl. 68-19.100.

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Florence, Dennis E.; Winders, Frank R., Jr.; and Wontrobski, Charles E., to Chrysler Corporation. Discriminating signal warning and selectively operable time delay control system for lighting circuit. 3,810,089, Cl. 340-52.00d.

Foerstner, Richard A., to Amana Refrigeration Inc. Mechanical coupling arrangement. 3,809,486, Cl. 403-374.000.

Fohrman, Seymour F.; and Chmela, John F. Book protector and mailer. 3,809,311, Cl. 229-87.00r.

Foldvari, Janos. Mechanically propelled water craft. 3,809,003, Cl. 115-1.00r.

Foley, William J.: *See—*
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Food Packers Equipments Co. Inc.: *See—*
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Chandross, Edwin Arthur; Fork, Richard Lynn; Kaminow, Ivan Paul; and Tomlinson, Walter John, III, 3,809,686.

Formby, John, & Company, Limited: *See—*
Formby, John Albert, 3,809,921.

Formby, John Albert, to Formby, John, & Company, Limited. Phase identifier assembly for endless conveyor control apparatus. 3,809,921, Cl. 307-116.000.

Forss, Kaj G.; Gadd, George Otto; Lundell, Ralf O.; and Williamson, Harry W. Process for the manufacture of protein-containing substances for fodder, foodstuffs and technical applications. 3,809,614, Cl. 195-81.000.

Fortuna, Achille C.; and Persson, Hans-Uno, to Lynch Communication Systems, Inc. Encoder-decoder for PCM systems. 3,810,020, Cl. 325-141.000.

Foster, Eric: *See—*
Pryce, William; and Foster, Eric, 3,808,919.

Foster, Frank H., mesne: *See—*
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Foster, Robert L., 1/2 to Slusher, Meredith W. Tool holder assembly. 3,808,655, Cl. 29-96.000.

Foster Wheeler Corporation: *See—*
Berman, Irwin; Henschel, Robert; Pai, David H.; Nash, Charles F.; Mack, Anthony M.; and Alfano, Bernardino M., 3,808,880.
Pratt, Harry M.; Magol, Byram J.; and Money, Dudley P., 3,809,018.

Fowler, Charles F.; and Dawson, Samuel G. Temperature probe cover. 3,809,228, Cl. 206-306.000.

Fowler, Walter E. Device for transferring personnel to and from a vessel. 3,808,625, Cl. 14-71.000.

Francis P. Brennan: *See—*
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Francombe, Maurice H.; Wu, Shu Y.; and Takei, William J., to Westinghouse Electric Corporation. Epitaxial growth of thermically expandable films and particularly anisotropic ferro-electric films. 3,808,674, Cl. 29-590.000.

Frank, Earl E.; and Graham, Glenn R., to Abex Corporation. Railroad car retarders. 3,809,188, Cl. 188-62.000.

Franken, Peter A.: *See—*
Cochran, Gary D.; Crosby, David A.; and Franken, Peter A., 3,809,886.

Frankle, Gerhard, to Daimler-Benz Aktiengesellschaft. Automatic flame-starting installation in particular for multi-fuel internal combustion engines. 3,809,045, Cl. 123-179.000.

Franklin Mint Corporation: *See—*
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Franz Morat GmbH: *See—*
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Franz, Robert W.; and Zielnicki, John J., to Cam-Fram Tool Co., Inc. End enclosure for transformers. 3,810,057, Cl. 336-98.000.

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French, Park. Swimmer's viewing float. 3,808,621, Cl. 9-310.00h.

Fresard, Marcel: *See—*
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Fried, Josef; Pribyl, Edward J.; and Krapcho, Johy, to Squibb, E. R., & Sons, Inc. Bis [Para (amino-loweralky-lenoxy) phenyl] alkanols and the salts thereof. 3,809,720, Cl. 260-570.00r.

Fried. Krupp Gesellschaft beschrankter Haftung: *See—*
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Friedemann, Andreas Zacharias, to Motoren-Werke Mannheim AG, vorm. Benz ABT Stationarer Motorenbau. Heaters for hot-gas engines. 3,808,815, Cl. 60-516.000.

Friedman, Sol. Game apparatus for simulating football, baseball and analogous games. 3,809,405, Cl. 273-88.000.

Friedrich Uhde GmbH: *See—*
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Frielingsdorf, Hans: *See—*
Mueller-Tamm, Heinz; Urban, Friedrich; Frielingsdorf, Hans; Nickl, Johann; Schweier, Guenther; and Kohnle, Josef, 3,809,657.

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Fritsch, Rudolf Paul. Granulator for granulating plastic strands. 3,808,929, Cl. 83-356.300.

Frohberger, Paul-Ernst: *See—*
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Fromm, Walter James, to Skil Corporation. Hammer drill. 3,809,168, Cl. 173-13.000.

Frost, Robert Ray. Orchard heater. 3,809,057, Cl. 126-59.500.

Frungel, Frank. Arrangement for simulating electrically radiation and light from nuclear explosions. 3,808,704, Cl. 35-1.000.

Frymaster Corporation, The: *See—*
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Galis, Alex J. Self-propelled haulage vehicle. 3,809,262, Cl. 214-152.000.

Gallap, Francis, to Exhibit Homes, Inc. Mold for forming a laminated plastic panel. 3,809,357, Cl. 249-161.000.

Galluzzi, Giovanni, to Fiocchi, Giulio, S.p.A. Self-propelling projectile for firearms. 3,808,973, Cl. 102-38.000.

Galvan, Ramon: *See—*
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Gange, Robert Allen; and Steinmetz, Carl Charles, to RCA Corporation. Corona discharge device. 3,809,974, Cl. 317-262.00a.

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Ganzhorn U. Stirn Kommanditgesellschaft: *See—*
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Gardiner, Arthur Noel; and Stern, Herman Abraham, to RCA Corporation. Liquid crystal device closure method. 3,808,769, Cl. 53-43.000.

Gardner, Frank H.; Stroup, Norman G.; and Krukow, Eugene J., to International Harvester Company. Reverse lockout. 3,808,784, Cl. 56-208.000.

Gardner, Paul S.: *See—*
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Garufo, James F. Weather curtain for airplane hangar entrance. 3,809,144, Cl. 160-184.000.

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Gaskell, Philip Hedley; Lythgoe, Stanley; Irlam, Philip Sidney; Miller, Robert Percy; and Barry, Thomas Ian, to Pilkington Brothers Limited. Method of making glass ceramic materials on molten metal support. 3,809,543, Cl. 65-33.000.

Gatts, James D. Infant environmental transition system. 3,809,065, Cl. 128-1.00r.

Gaul, Robert G., to Paragon Wire & Cable Corporation. Electric cord coiler. 3,809,331, Cl. 242-100.100.

Gay, Derek J.; Smedley, William H.; Cohen, Aaron G.; Dworkin, Darryl R.; Nuttall, Michael W.; and Wilson, Nicol S., to Mattel, Inc. Portable display toy. 3,808,732, Cl. 46-12.000.

Gazuit, Georges. Loader for tire curing press. 3,809,423, Cl. 294-88.000.

Geary, William M. Bed and pillow assembly. 3,808,615, Cl. 5-338.000.

Gebald, Gregor, to Schlofhorst, W., & Co. Method and device for monitoring the production process of automatic yarn winding machines. 3,809,869, Cl. 235-151.300.

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Gehring, Donald H. Inductorless amplitude modulator and demodulator apparatus. 3,810,047, Cl. 332-31.00r.

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Gem Industries, Inc.: *See—*
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Gersch, William R. Animated display apparatus. 3,808,721, Cl. 40-106.520.

Gerstmann, Joseph, to Steam Engine Systems Corporation. Heat exchanger and fluid heater. 3,809,061, Cl. 126-350.00r.

Gezari, Walter A., to International Telephone and Telegraph Corporation, mesne. Sanitary holding sump and method of making. 3,808,996, Cl. 114-.50r.

Gidge, Lester, to Monsanto Company. Non-tear seams produced by radio frequency means. 3,809,596, Cl. 156-380.000.

Giflo, Henrik; Enekes, Sandor; Zambo, Pal; Sziklavari, Janos; Farkas, Istvan; Ivan, Geza; Molnar, Jozsef; and Vamosi, Jozsef, to Kohaszati, Lenin. Properly weldable, corrosion resistant structural steel of high yield point. 3,809,550, Cl. 75-124.000.

Gilbaugh, John W. Animal trap. 3,808,729, Cl. 43-88.000.

Gilbert & Barker Manufacturing Company: *See—*
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Gilbert, Lee N., to United States of America, Navy. Two position liquid flow control valve. 3,809,127, Cl. 138-44.000.

Gilbert, Ronald Albert; Petrie, James Alexander; and Bracey, Kenneth Edward George, to Rolls-Royce (1971), Limited. Epicyclic gear train. 3,808,913, Cl. 74-801.000.

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Gill, Walter J.; and Mellenger, James A., to Avantek, Inc. Asynchronous quadriphase communications system and method. 3,809,817, Cl. 179-15.0bs.

Gillot, Jacques; and Lux, Benno, to Battelle Memorial Institute. Method of increasing the adhesion of a metal body surface to rubber. 3,809,635, Cl. 204-192.000.

Gilpatrick, Louis O., to United States of America, Atomic Energy Commission. Synthesis of sodium hydroxytrifluoroborate. 3,809,762, Cl. 423-277.000.

Giono-Berber, Paulette, born Crouy-Sur-Ourcq, Michel: *See—*

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Giroux, Jean Louis. Portable barbecue oven. 3,809,051, Cl. 126-9.00r.
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Godfrey, Arthur W.: *See—*
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Godwin, George A.; and Wagle, William E., to Sarkes Tarzian Inc. Program timer assembly with improved cam disc face circumferential grooves for abrupt radial displacement. 3,809,831, Cl. 200-38.00c.
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Schmid, August; and Goens, Georges, 3,809,398.
Schmid, August; and Goens, Georges, 3,809,400.
Goldberg, Eugene J.; Kramer, Marvin W.; and Licci, Joseph R. Attachment to hair. 3,809,099, Cl. 132-53.000.
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Goldmacher, Joel E.; and Tayag, Miguelita G., to Optel Corporation. Liquid crystal device. 3,809,456, Cl. 350-160.0lc.
Goldman, Arnold J.; Kurtin, Stephen L.; and Mead, Carver A., to Lexitron Corporation. Electronic text display and processing system. 3,810,107, Cl. 340-172,500.
Goldman, Robert N. Signal identification system. 3,810,156, Cl. 340-347.0ad.
Goldner, Heinz-Dieter, to Hartmann & Braun Aktiengesellschaft. Measuring instrument. 3,810,014, Cl. 324-130.000.
Goldsberry, Fred L., to Lone Star Gas Company. Volumetric flow meter. 3,808,886, Cl. 73-264.000.
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Gouba, Alfred J. Link cutting machine. 3,808,636, Cl. 17-1.00f.
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Gouge, Edwin. Adjustable clamps. 3,808,643, Cl. 24-19.000.
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Green Peter L.; Lenfesty, Gordon A.; Talbot, Edmund H.; Joslin, Allen; and Kovacevic, Vukasin, to Imperial Modular Systems, Ltd., mesne. Modular building construction. 3,808,761, Cl. 52-300.000.
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Grossenbacher, Ernst. Machine for the preparation of drinks. 3,808,961, Cl. 99-281.000.
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Gruenewald, Bryan J. Apparatus for developing quickness in swinging of a baseball bat. 3,809,397, Cl. 273-26.00b.
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GTE Automatic Electric Laboratories, Incorporated: *See*—
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Gulf Research & Development Company: *See*—
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Guthans, Harold A., to Guthans Engineering Co. Cable locking hooks. 3,808,650, Cl. 24-230.500.
Haban, Joseph. Snow thrower with rotatable snow spout. 3,808,715, Cl. 37-43.00r.
Habermeier, Jurgen; Porret, Daniel; and Baumann, Dieter, to Ciba-Geigy Corporation. Epoxide resin mixtures of heterocyclic N,N-diglycidyl compounds. 3,809,660, Cl. 260-2.0ep.
Haberthur, Walter, to Bron Elektronik AG. Portable current supply device for flash bulbs and housing means. 3,809,968, Cl. 317-120.000.
Hadden, Richard: *See*—
Faurschou, Donald K.; Misener, Donald C.; Pope, James C.; and Hadden, Richard, 3,809,639.
Haefely, Emil, & Cie AG: *See*—
Adler, Hermann, 3,810,030.
Haffner, Donald G.: *See*—
Hoffmeyer, Knud H.; Haffner, Donald G.; and Ecker, Frank A., 3,808,778.
Hagiwara, Kenji: *See*—
Tanaka, Yasuhiko; Shimazaki, Yasumi; and Hagiwara, Kenji, 3,808,862.
Hahner, Reinhard: *See*—
Gotsch, Dieter; Hahner, Reinhard; Kirn, Manfred; and Lederer, Hans, 3,808,904.
Hai, Nhu Bui, to Thomson-CSF. Capped antenna of the offset Cassegrainian type. 3,810,187, Cl. 343-781.000.
Haines, Robert C.; Barrett, John E.; and Stevens, Eric H., to Dunlop Holdings Limited. Tennis rackets and frames therefor. 3,809,402, Cl. 273-73.00c.
Hajnal, Steven. Waterless cooking pot. 3,809,063, Cl. 126-373.000.
Halcon International, Inc.: *See*—
Golden, Richard L., 3,809,724.
Hall, Earl B. Inclinometer. 3,808,697, Cl. 33-312.000.
Hall, Merwin Guy. Two bar exerciser. 3,809,394, Cl. 272-80.000.
Hallerback, Stig Lennart, to SKF Industrial Trading and Development Company B.V. Bearing unit. 3,809,445, Cl. 308-184.000.
Hama, Tatsuharu: *See*—
Hosoya, Minoru; Hama, Tatsuharu; and Arafune, Hisayuki, 3,808,957.
Hamada, Yoshitugu; Nakamoto, Yasunori; and Jinno, Seizo, to Yanmar Diesel Engine Co., Ltd. Cylinders of internal-combustion engines. 3,808,955, Cl. 92-169.000.
Hamaguchi, Ichiro: *See*—
Ono, Shigeo; and Hamaguchi, Ichiro, 3,810,226.
Hamilton, Harry A.: *See*—
Chun, Sun W.; Hamilton, Harry A.; and Montagna, Angelo A., 3,809,643.
Hammerle, Dennis R.: *See*—
Warrick, Edward C.; Walch, Leo M., Jr.; and Hammerle, Dennis R., 3,809,312.
Handford, Carl E. Force multiplying type cross-bow. 3,809,048, Cl. 124-25.000.
Handtmann, Albert, Metallgusswerk, Armaturen- und Fleischereimaschinenfabrik: *See*—
Staudenrausch, Georg, 3,809,500.
Hankele, Allen R., to Hankele Sports Enterprises, Inc. Hockey stick. 3,809,401, Cl. 273-67.00a.
Hankele Sports Enterprises, Inc.: *See*—
Hankele, Allen R., 3,809,401.
Hanotier, Jacques Daniel Victor; and Hanotier, Monique Josephe Simone, to Labofina S.A. Process for the production of alpha-naphthyl esters. 3,809,715, Cl. 260-479.00r.
Hanotier, Monique Josephe Simone: *See*—
Hanotier, Jacques Daniel Victor; and Hanotier, Monique Josephe Simone, 3,809,715.
Hansen, Donald J., to General Signal Corporation. Condensation apparatus. 3,809,496, Cl. 417-40.000.
Hansen, Lloyd Frank, to American Cyanamid Company. Pressurized portable dispenser. 3,809,084, Cl. 128-266.000.
Hansen, Paul E., to Minnesota Mining and Manufacturing Company. Surgical drape. 3,809,077, Cl. 128-132.00d.
Hansen, Ralph Holm, to Bell Telephone Laboratories, Incorporated. Phenylhydrazone antioxidants for polyolefins. 3,809,675, Cl. 260-45.90r.
Hara, Hideo, to Sony Corporation. Electric clock. 3,808,791, Cl. 58-23.00d.
Haradyn, Dan, 20% to Lee, Raymond, Organization, Inc., The. Rotatable disc peg probe device having an electrical conducting rim switch. 3,809,409, Cl. 273-139.000.
Harano, Allen A.: *See*—
Villalobos, Luis F.; Harano, Allen A.; and Breinlinger, Richard H., 3,809,868.
Harder, Arthur John. Multiple purpose apparatus. 3,808,607, Cl. 4-2.000.
Hardin, James T., to Eltra Corporation. Multiple output alternator. 3,809,995, Cl. 321-5.000.
Harding, Brian: *See*—
Ryffin-Hughes, John Malcolm; Harding, Brian; and Lake, Graham Albert John, 3,809,052.
Harding, Ray S., to Case, J. I., Company. Cone disk spring relief valve. 3,809,118, Cl. 137-525.000.
Hards, John E., to Durand Machine Company, Ltd. Rotary veneer clipper. 3,808,925, Cl. 83-346.000.
Harjes, Henry Herman, Jr.: *See*—
Parks, William Louis; Grenoble, William Luster, Jr.; Harjes, Henry Herman, Jr.; and McCarthy, Lawernce James, 3,810,102.
Harmon, William J., Jr.: *See*—
Eisenberg, Mark F.; and Harmon, William J., Jr., 3,809,952.
Harner, Kermit L., to United Aircraft Corporation. Compressor surge sensor. 3,809,490, Cl. 415-28.000.
Harper Development Corporation: *See*—
Harper, Murry D., 3,809,025.
Harper, Ernest A.; and Bailey, Dunn M., to Phillips Petroleum Company. Refrigerator process. 3,808,826, Cl. 62-9.000.
Harper, Murry D., to Harper Development Corporation. Rotary engine having inclined piston and cylinder station axes. 3,809,025, Cl. 123-8.470.
Harris, Edward Paul, to Rosemount Engineering Company Limited. Apparatus for automatically evaluating the voltage at a number of test points sequentially. 3,810,012, Cl. 324-73.00r.
Harris, Harold Ronald. Quick disconnect pressurization apparatus. 3,809,121, Cl. 137-613.000.
Harris, Rano J., Jr.: *See*—
Harris, Rano J., Sr.; and Harris, Rano J., Jr., 3,809,298.
Harris, Rano J., Sr.; and Harris, Rano J., Jr., to Precision Sampling Corporation. Syringe. 3,809,298, Cl. 222-386.000.
Harris, William: *See*—
Walker, Robert; and Harris, William, 3,809,806.
Harris-Intertype Corporation: *See*—
Rana, Victoriano F., 3,809,385.
Zugel, Victor A., 3,809,384.
Harrison, Anthony William, to Girling Limited. Brake adjusters. 3,809,193, Cl. 188-196.0ba.
Harrison, Brian G., to Franklin Mint Corporation. Packaging for flat objects. 3,809,217, Cl. 206-84.000.
Harro assor. to said Gottfried: *See*—
Reissinger, Gottfried; and Reissinger, Harro, 3,808,714.

Hartmann & Braun Aktiengesellschaft: *See*—
Goldner, Heinz-Dieter, 3,810,014.

Hartmann, Clinton Sylvester: *See*—
Jones, William Stanley; and Hartmann, Clinton Sylvester, 3,810,257.

Harwood, William J. Portable guide jig for hand drill. 3,809,489, Cl. 408-110.000.

Hasagawa, Tachio, to Canon Kabushiki Kaisha and Canon Denishi Kabushiki Kaisha. Cross type magnetic head. 3,810,244, Cl. 360-118.000.

Hasegawa, Hakumi: *See*—
Yamaguchi, Yoshihiro; Matsushita, Tomiharu; Noguchi, Masataka; Nakagawa, Junichi; and Hasegawa, Hakumi, 3,808,860.

Hasegawa, Kensuke: *See*—
Motoda, Kenro; and Hasegawa, Kensuke, 3,809,988.
Motoda, Kenro; and Hasegawa, Kensuke, 3,810,008.

Hatebur, F. B., AG: *See*—
Richner, Hans, 3,808,871.

Hattendorf, Edwin R., to Collins Radio Company. Synthesis of bank and pitch signals utilizing rate and acceleration input parameters. 3,809,867, Cl. 235-150.200.

Haugsjaa, Paul O.; Heller, Adam; Nelson, William F.; and Bocchimuzzo, Anthony, to GTE Laboratories Incorporated. Electret transducing device. 3,809,828, Cl. 179-100.4lb.

Haugwitz, Rudiger D., and Narayanan, Venkatachala L., to Squibb, E. R., & Sons, Inc. (1,3,5)-Thiadiazinobisbenzimidazoles. 3,809,692, Cl. 260-243.00r.

Hauner, Friedrich: *See*—
Schneider, Gottfried; and Hauner, Friedrich, 3,808,641.

Hauser, Hans, to Foote, J. B., Foundry Co., The. Engine and transmission with safety system. 3,808,914, Cl. 74-850.000.

Hausler, Rudolf H.; and Sampson, Robert W., to Universal Oil Products Company. Apparatus for measuring material fouling of a test specimen. 3,810,009, Cl. 324-65.00r.

Havinga, Reginoldus; and Swaters, Pieter Dirk, to Koninklijke Industrieele Maatschappij Noury & Van Der Lande N.V. Deventer. Ultraviolet light stabilizers. 3,809,707, Cl. 260-404.000.

Haws Drinking Fountain Company: *See*—
Wright, Allen C., 3,809,315.

Hayashi, Yoshihiro, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Passenger vehicle safety belt locking device. 3,809,332, Cl. 242-107.400.

Hayes-Albion Corporation: *See*—
Shepherd, William B., 3,809,258.

Hays, John D.; Baswell, Harlen L.; Combs, Jerry A.; and Brown, Dale G., to National Cash Register Company, The. Torsional stepping motor and exciter apparatus therefor. 3,809,989, Cl. 318-696.000.

Hazeley, James F., to Armstrong Cork Company. Ceiling system suspension clip and runner. 3,809,358, Cl. 248-317.000.

Healey, Robert A., to International Business Machines Corporation. Stack machanism for a data processor. 3,810,117, Cl. 340-172.500.

Heard, James L.; Hoffman, William C.; and Opittek, Eugene W., to Hughes Aircraft Company. Digital scan converter. 3,810,174, Cl. 343-5.0dp.

Hecox, William, to Exact Weight Scale Co., Inc. Read only memory apparatus. 3,810,122, Cl. 340-173.0lm.

Hedde, Jean. Switching matrix. 3,810,160, Cl. 340-166.00r.

Hederich, Manfred: *See*—
Erdmenger, Rudolf; Ullrich, Martin; and Hederich, Manfred, 3,809,140.

Hedstrom, Bengt; and Hoden, Ebbe. Diaper. 3,809,089, Cl. 128-287.000.

Heffrom, Allan J.: *See*—
Oeming, Joseph A.; Heffrom, Allan J.; and Estry, Arthur L., 3,808,653.

Heidecker, Robert F., to Iomec, Inc. Electrical signal filter. 3,810,067, Cl. 328-164.000.

Heidelberger Druckmaschinen Aktiengesellschaft: *See*—
Wirz, Arno, 3,809,389.

Heiler, Wolfgang; Muller, Rudolf; and Becker, Jean-Jacques, to Vestra-Union, S.A. Automatic unit for overcasting or assembling pieces of fabric along seam lines of different forms. 3,808,993, Cl. 112-155.000.

Heimann, Georg. One- and surplus-way magnetic valve with permanent magnet and controls by pulses. 3,809,123, Cl. 137-625.500.

Heinz, Richard. System for controlling number of revolutions of the tape drive in a tape recording and replaying apparatus. 3,809,452, Cl. 318-271.000.

Heinz, Scholten: *See*—
Kriestan, Wolfgang; and Heinz, Scholten, 3,809,678.

Heist, Hans; and Silbereisen, Dieter, to Kalle Aktiengesellschaft. Apparatus for the automatic folding and creasing of sheet material. 3,809,387, Cl. 270-79.000.

Helenurm, Kalju, to Lock, Jonathan, Limited. Adjustable key for cylinder locks. 3,808,853, Cl. 70-411.000.

Heller, Adam: *See*—
Haugsjaa, Paul O.; Heller, Adam; Nelson, William F.; and Bocchimuzzo, Anthony, 3,809,828.

Heller, Laszlo; Szucs, Laszlo; and Szabo, Zoltan, to Energiagazdalkodsi Intezet. Apparatus for drying and superheating steam. 3,808,775, Cl. 55-269.000.

Heller, Laszlo; Szucs, Laszlo; and Szabo, Zoltan, to Energiagazdalkodasi Intezet. Heat exchanger for transferring heat between gases. 3,809,154, Cl. 165-105.000.

Heller, William C., Jr.: *See*—
Leatherman, Alfred F., 3,810,190.

Helmcke, Conrad; Hermann, Walter; and Kraus, Peter, to Messerschmitt-Bolkow-Blohm GmbH. Conductor for conducting electric signals. 3,809,803, Cl. 174-114.00r.

Hempel, James N.: *See*—
Groth, Clarence N.; Hempel, James N.; Wieczorek, Robert A.; Meyer, Charles F.; and Cook, Robert G., 3,809,965.

Hendler, Nelson: *See*—
Krause, Stephen R.; and Hendler, Nelson, 3,809,985.

Hendrickson, G. Vernon; and Henrickson, Kermit A. Shock absorber mounting for snowmobiles. 3,809,172, Cl. 180-5.00r.

Henning, Michael Laurence, to Plessey Handel und Investments A.G. Light scattering measurement instrument. 3,809,912, Cl. 250-574.000.

Henoch, Bengt, to Institutet for Mikrovagsteknik. Device for continuous measurement and/or monitoring of a dimension of an object of large longitudinal dimension. 3,810,004, Cl. 324-58.50r.

Henrickson, Kermit A.: *See*—
Hendrickson, G. Vernon; and Henrickson, Kermit A., 3,809,172.

Henry, Augustus P., to Bertea Corporation. Pressure transformer. 3,809,502, Cl. 417-225.000.

Henschel, Robert: *See*—
Berman, Irwin; Henschel, Robert; Pai, David H.; Nash, Charles F.; Mack, Anthony M.; and Alfano, Bernardino M., 3,808,880.

Hensley, James Carl: *See*—
Byers, Donald W.; Petry, Chester H., Jr.; Nordstrom, Carl G.; and Hensley, James Carl, 3,808,722.

Hepworth Iron Company Limited, The: *See*—
Glover, John Benjamin, 3,809,412.

Herbello, Mario, to Factory Mutual Research Corporation. Fluid flow control apparatus. 3,809,112, Cl. 137-236.000.

Herbst, Richard, to Krauss-Maffei Aktiengesellschaft. Means for moving the screws of injection units in injection molding machines. 3,808,953, Cl. 92-2.000.

Herman, Joseph L., to Thompson, Emily Herman. Galvanizing technique for wire and the like. 3,809,570, Cl. 117-102.00m.

Hermann, Walter: *See*—
Helmcke, Conrad; Hermann, Walter; and Kraus, Peter, 3,809,803.

Hershberg, David E.; Chaplin, Arthur H.; and Dewland, Joseph F., to International Telephone and Telegraph Corporation. System for deriving from a single stable oscillator a plurality of different selectable local oscillator signals. 3,810,038, Cl. 331-60.00.

Herter, George L., to Herter's Inc. All plastic shotshell case with transversely oriented undulations on outer cylindrical surface. 3,808,974, Cl. 102-43.00p.

Herter's Inc.: *See*—
Herter, George L., 3,808,974.

Hertz, Daniel, to Raytheon Company. Analog-to-digital converter level detector. 3,809,925, Cl. 307-235.000.

Heseltine, Donald W.: *See*—
Carpenter, James W.; Mee, John D.; and Heseltine, Donald W., 3,809,691.

Hess, Juergen: *See*—
Linder, Ernst; Adalbert, Gerhard; and Hess, Juergen, 3,809,511.

Hesse, Juergen: *See*—
Wagner, Alfred; and Hesse, Juergen, 3,808,865.

Hetherington, Colin S. Pneumatic pruning shear. 3,808,683, Cl. 30-228.000.

Heuner, Robert Charles; and Niemiec, Stanley Joseph, to RCA Corporation. Liquid crystal display. 3,809,458, Cl. 350-160.0lc.

Hewlett-Packard Company: *See*—
Bloedorn, Arthur R., 3,810,036.
Ricci, David W., 3,810,103.

Hibbard, George A. Wet or dry sump motor. 3,808,808, Cl. 60-327.000.

Higashiyama, Kenji; and Hirata, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Device for measuring an activity of silver ions. 3,809,636, Cl. 204-195.00m.

Higashiyama, Kenji; and Hirata, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Device for measuring an activity of cupric ions. 3,809,637, Cl. 204-195.00m.

Higashiyama, Kenji; and Hirata, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Device for measuring an activity of maganous ions. 3,809,638, Cl. 204-195.00m.

Hill, Jack J.: *See*—
Wilk, Richard B.; and Hill, Jack J., 3,809,520.

Hinks, William L., to Goodyear Tire & Rubber Company, The. Apparatus and method to effect reading of a vehicle tire identification pattern. 3,810,159, Cl. 340-146.30r.

Hino, Tetsuo: *See*—
Kozu, Isao; Kurihara, Hidetoshi; and Hino, Tetsuo, 3,810,239.

Hipple, George M., to Robertshaw Controls Company. Snap switch construction and snap blade therefor or the like. 3,809,834, Cl. 200-67.00d.

Hirata, Hiroshi: *See*—
Higashiyama, Kenji; and Hirata, Hiroshi, 3,809,636.
Higashiyama, Kenji; and Hirata, Hiroshi, 3,809,637.
Higashiyama, Kenji; and Hirata, Hiroshi, 3,809,638.

Hirata, Noritsugu: *See*—
Sakaguchi, Keiichi; and Hirata, Noritsugu, 3,810,200.
Sakaguchi, Keiichi; Someya, Atsushi; and Hirata, Noritsugu, 3,810,206.

Hirosawa, Shigeo. Mixer. 3,809,322, Cl. 241-46.170.

Hitachi, Ltd.: *See*—

Hosho, Yukio; Moriya, Hisanori; and Oyama, Yoshishige, 3,809,042.
Kawakami, Kanji; and Kaneko, Eiji, 3,810,135.
Koike, Toshio, 3,809,937.
Sugawara, Hiroyuki; and Kuwabara, Kooji, 3,809,933.
Tokunaga, Kazuyoshi; Yamada, Takahiro; Doi, Tetuo; and Takahashi, Tetsuo, 3,810,194.
Utsumi, Yoshiharu; and Terui, Hideaki, 3,810,254.
Yamazaki, Eiichi; Maruyama, Koichi; Ueda, Toshio; and Nakamura, Tomizo, 3,809,558.
Yasuda, Michio; Makihara, Hiroshi; and Kadota, Shozo, 3,810,093.

Hluchan, Stephen E.; and Villani, Gerard J., to Norton Company. Microfarad range varactor. 3,809,971, Cl. 317-230.000.

Hoden, Ebbe: *See*—
Hedstrom, Bengt; and Hoden, Ebbe, 3,809,089.

Hodgson, Victor Francis: *See*—
Blackwell, James Brian; Killen, Dennis; and Hodgson, Victor Francis, 3,809,512.

Hoeksema, Joe Henry: *See*—
Sutherland, Gail Russell; Leonard, Ronald Keith; and Hoeksema, Joe Henry, 3,808,783.

Hoerner Waldorf Corporation: *See*—
Edwards, John W.; and Tull, Herbert G., III, 3,809,235.
Tull, Herbert G., III, 3,808,965.

Hoesly, David D.: *See*—
Nesta, Charles; Jackson, Earl V.; Hoesly, David D.; Schoppe, Wayne F.; Squassoni, Gino F.; and Warter, Peter J., 3,809,471.

Hoff, Marcian Edward, Jr., to Intel Corporation. Programmable circuit-the method of programming thereof and the devices so programmed. 3,810,127, Cl. 340-173.0sp.

Hoffman, William C.: *See*—
Heard, James L.; Hoffman, William C.; and Opittek, Eugene W., 3,810,174.

Hoffman, William K.; and Kao, Albert Y., to International Business Machines Corporation. Memory accessing system. 3,810,124, Cl. 340-173.00r.

Hoffmann-La Roche Inc.: *See*—
Kerb, Ulrich; Wiechert, Rudolf; Eder, Ulrich; and Berndt, Hans-Detlef, 3,809,690.
Spector, Sidney, 3,809,782.

Hoffmeyer, Knud H.; Haffner, Donald G.; and Ecker, Frank A., to Jacobsen Manufacturing Company. Lawn mowers articularly supported on a tractor. 3,808,778, Cl. 56-7.000.

Hoge, Henri H., to Allied Controls Company, Inc., mesne. Motor speed control system. 3,809,984, Cl. 318-244.000.

Hogg, Walter R.: *See*—
Coulter, Wallact H.; and Hogg, Walter R., 3,810,011.

Holaday, Charles E.: *See*—
Barnes, Phillip C., Jr.; and Holaday, Charles E., 3,808,964.

Holland Company: *See*—
Chierici, Osvaldo F.; and Winters, Frederick, 3,809,251.

Holland, Robert L.: *See*—
Mathias, James J.; and Holland, Robert L., 3,809,758.

Hollis, Samuel H.: *See*—
Rigney, Jack C.; Hollis, Samuel H.; and Doonan, Nathaniel J., 3,809,013.

Holmes, Allie B., to Opti-Cap, Inc. Minimizing corrosion of overflow receptacle equipped engine cooling system. 3,809,150, Cl. 165-1.000.

Holophane Company, Inc.: *See*—
Welty, Dale E., 3,809,881.

Holt, David T., deceased: *See*—
Adams, Crawford W.; and Holt, David T., deceased, 3,809,343.

Holt, Myrtle, executrix: *See*—
Adams, Crawford W.; and Holt, David T., deceased, 3,809,343.

Honeywell Inc.: *See*—
Stauffer, Norman L., 3,810,191.

Honeywell Information Systems Inc.: *See*—
Besenfelder, Edward R., 3,810,233.
De Voy, David D.; Barlow, George J.; and Klashka, John A., 3,810,231.
Huettner, Robert E.; and Tymann, Edward B., 3,810,120.
Nibby, Chester M.; Manton, John C.; and Curley, John L., 3,809,884.
Stafford, John P., 3,810,115.

Hoogovens Ijmuiden B.V.: *See*—
Plazier, Nico, 3,809,376.

Hook, Richard Wyane; and Jackson, William Wayne, to Deere & Company. Storage tank and recleaning apparatus for root crop harvesters. 3,809,164, Cl. 171-58.000.

Hoover, William W. Warning sign. 3,810,091, Cl. 340-84.000.

Hopkins, John Warren; Townley, Ray Clifford; and Zimmerman, Leonard, to Bell Telephone Laboratories, Incorporated. Adaptive data readout timing arrangement. 3,810,235, Cl. 360-51.000.

Hoppesch, Joseph P., to Borg-Warner Corporation. Modulation responsive anti-evasion system for breath testers. 3,809,067, Cl. 128-2.00c.

Horine, Angela A. Test for lead. 3,809,537, Cl. 23-230.00r.

Horner, Ellwood J., to American Hoechst Corporation. Apparatus for processing two sides of a printing plate. 3,809,105, Cl. 134-122.000.

Horowitz, Hugh H.; and Tyler, William E., III, to Esso Research and Engineering Company. Olefin separation process. 3,809,726, Cl. 260-677.00a.

Horowitz, Noah; Stupeck, Donald; and Novak, Lubomir, to Sperry Rand Corporation, mesne. Data recording and verification system. 3,810,236, Cl. 360-53.000.

Horsford, Anne; Lewison, George Richard Grant; and Paffett, James Arthur Haines, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Trade and Industry in Her Britannic Majesty's Government of the. Passive roll stabilisers. 3,80,000, Cl. 114-124.000.

Hosho, Yukio; Moriya, Hisanori; and Oyama, Yoshishige, to Hitachi, Ltd. Internal combustion engine equipped with means for reducing the amount of nitrogen oxide which is exhausted from the engine. 3,809,042, Cl. 123-148.00c.

Hosoya, Minoru; Hama, Tatsuharu; and Arafune, Hisayuki, to Kao Soap Co., Ltd. Apparatus for attaching hangers to paper boxes. 3,808,957, Cl. 93-36.700.

Hotchkiss, Jack G.: *See*—
Burk, Robert L.; and Hotchkiss, Jack G., 3,809,059.

Hotten, Bruce W., to Chevron Research Company. Magnesium phenoxides and lubricants containing the same. 3,809,648, Cl. 252-32.70e.

Houston Engineering Research Corporation: *See*—
Schweppe, Joseph L.; McMorris, Arthur H.; and Ahlgren, Erick L., 3,809,120.

Hovasse, Christian: *See*—
Allemand, Pierre; and Hovasse, Christian, 3,809,665.

Howard, Gerald T.: *See*—
Nichols, Charles E., Jr.; and Howard, Gerald T., 3,809,595.

Howard, Wayne H.; Young, Donald R.; and Adachi, Richard R., to United States of America, National Aeronautics and Space Administration. Programmable physiological infusion. 3,809,871, Cl. 235-151.300.

Howarth, George: *See*—
Damodaran, Nandyelath; Moffatt, John; Jones, Gordon; and Howarth, George, 3,809,689.

Howells, John D.: *See*—
Cook, Ronald; Guppy, John Reginald; and Howells, John D., 3,810,027.

Howland, Robert F.; Mansky, Michael H.; and Richards, Willie J., to General Foods Corporation. Soluble coffee of improved stability and flavor. 3,809,781, Cl. 426-384.000.

Hoylman, H. Wayne: *See*—
Rawson, Donald E.; Greene, Norman D.; and Hoylman, H. Wayne, 3,808,889.

Hoyt, Harold C., Jr., to Meyer Labs, Inc. Electronic traffic signal control system. 3,810,084, Cl. 340-41.00r.

Hubbard, David G., to Chance, A. B., Company. Remote closing power load pickup device. 3,810,060, Cl. 337-155.000.

Hubbard, Elbert G., to Arbeck Industrial & Mining Equipment Co. Limited. Pneumatic conveying apparatus. 3,809,438, Cl. 302-22.000.

Hubbell, Harvey, Incorporated: *See*—
Jaconette, Frank C., Jr., 3,810,069.

Hudkin, Elizabeth J. Mathematical instruction game. 3,808,708, Cl. 35-31.00d.

Huettner, Robert E.; and Tymann, Edward B., to Honeywell Information Systems, Inc. Automatic deactivation device. 3,810,120, Cl. 340-172.500.

Hughes Aircraft Company: *See*—
Andrews, George J.; and Rosen, Harold A., 3,809,337.
Bell, William H., 3,810,175.
Heard, James L.; Hoffman, William C.; and Opittek, Eugene W., 3,810,174.
Woodbury, Eric J.; and Dewhirst, Donald R., 3,810,044.

Hughes Aircraft Company, mesne: *See*—
Villalobos, Luis F.; Harano, Allen A.; and Breinlinger, Richard H., 3,809,868.

Hughes, Georges C., to Textron, Inc. Monitor and automatic shutoff for gas regulators. 3,809,108, Cl. 137-73.000.

Hughes, James R.; and St. John, John H., to Ford Motor Company. Automatic choke testing method. 3,808,883, Cl. 73-118.000.

Hughes, Ronald A.: *See*—
Bhutani, Harish K.; Oda, Albert Y.; and Hughes, Ronald A., 3,808,942.

Huiden, Barend: *See*—
Tebbe, Rolf; and Huiden, Barend, 3,809,345.

Hungerford, Laurence D.; and Marshall, Clarence G., to Collins Radio Company. Looped direct switching system. 3,810,100, Cl. 340-172.500.

Hunt, William Allen, to Emco (Great Britain) Limited. Loading machine impact tool supported by adjustable boom and carriage. 3,809,169, Cl. 173-28.000.

Hunter, Charles G. Shaft for conventional golf club. 3,809,403, Cl. 273-80.00b.

Hunter, Earl K., to United States of America, Navy. Swimmer-dive navigation and reconnaissance device. 3,810,080, Cl. 340-3.00r.

Hunter, Robert T.: *See*—
Elkind, Vincent T.; Hunter, Robert T.; Marder, Herman L.; and Hutchinson, Homer F., 3,809,663.

Hurley, Raymond E., to Owens-Corning Fiberglas Corporation. Apparatus for collection of linear material. 3,808,789, Cl. 57-58.700.

Hurley, Thomas P., to Sprague Electric Company. Multilayer ceramic capacitor and method of terminating. 3,809,973, Cl. 317-258.000.

Hurschman, Alfred A., to Ampoules, Inc. Plunger tack. 3,809,082, Cl. 128-218.00p.

Hurst, John, to Grace, W. R., & Co. Waterstops. 3,808,762, Cl. 52-403.000.

Husqvarna Vapenfabriks Aktiebolag: *See—*
Risman, Per Olov G.; and Rosengren, Lars O., 3,810,248.

Hussain, Anwar; and Truelove, James E., to Interx Research Corporation. Novel ester of [(methylamino) methyl] benzyl alcohol. 3,809,714, Cl. 260-479.00r.

Hutchinson, Homer F.: *See—*
Elkind, Vincent T.; Hunter, Robert T.; Marder, Herman L.; and Hutchinson, Homer F., 3,809,663.

Hutchinson, Homer F., to GTE Automatic Electric Laboratories, Incorporated. Power supply system control circuit. 3,809,963, Cl. 317-22.000.

Hutchinson, Royal Edward; and Bruce, George Brebber. Machine for compacting and packaging waste material. 3,808,766, Cl. 53-24.000.

Hutchinson, William Y.; and Kushmuk, Walter P., to Continental Scale Corporation. Weighing and height measuring device. 3,808,694, Cl. 33-169.00r.

Hutchinson, William Y.; and Kushmuk, Walter P., to Continental Scale Corporation. Weighing scale. 3,809,171, Cl. 177-165.000.

Hutchison, Williston E. Long-term deep submergence battery power supply. 3,809,581, Cl. 136-161.000.

Hutter, Harold Gregory. Sealed coaxial connector. 3,810,076, Cl. 339-177.00r.

Hydraulics Unlimited Manufacturing Co.: *See—*
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Hydro-Dent Corporation: *See—*
Tauman, Harvey; Sklover, Isadore T.; Tauman, Irving; and Kliment, Charles K., 3,808,686.

Hydrocarbon Research, Inc.: *See—*
Johnson, Axel R.; Wolk, Ronald H.; and Nongbri, Govanon, 3,809,644.

Ideal Toy Corporation: *See—*
Cooper, Julius; and Berkin, Harvey, 3,808,730.
Leicht, Charles; and Reinertsen, Tormod K., 3,809,396.

Iguchi, Shin-Ichi: *See—*
Akai, Shin-Ichi; Mori, Hideki; Takahashi, Nobuo; and Iguchi, Shin-Ichi, 3,809,584.

Iida, Hirofumi, to Tokyo Gas Company Limited and Nippon Crucible Company Limited. Non-ferrous metal melting furnace. 3,809,378, Cl. 266-33.00r.

Iiyama, Akihiro; and Gomita, Minoru, to Olympus Optical Company, Limited. Method of making pin electrodes for electrostatic recording. 3,808,675, Cl. 29-592.000.

Ikeda, Hisao, to Matsushita Electric Industrial Co., Ltd. Cassette-type magnetic tape recording and reproducing apparatus. 3,810,242, Cl. 360-96.000.

Iles, Brian Rodney: *See—*
Oakes, Vincent; and Iles, Brian Rodney, 3,809,677.

Ilfrey, William T.; and Sheffield, James R., to Esso Production Research Company. Method and apparatus detecting fluid influx in offshore drilling operations. 3,809,170, Cl. 175-7.000.

Iliakidis, Athanassious: *See—*
Reed, Joseph; Shapiro, Jonas M.; Iliakidis, Athanassious; and Apostolakis, Anthony, 3,809,816.

Imperial Chemical Industries Limited: *See—*
Garner, Paul Johnson, 3,809,519.
Sandiford, Denis James Henry; and Smith, Alan George, 3,809,733.

Imperial Knife Associated Companies, Inc.: *See—*
McLaren, Vincent H., Jr.; and Panchal, Navnit, 3,808,917.

Imperial Modular Systems, Ltd., mesne: *See—*
Green Peter L.; Lenfesty, Gordon A.; Talbot, Edmund H.; Joslin, Allen; and Kovacevic, Vukasin, 3,808,761.

Imprescia, Richard J.: *See—*
Wewerka, Eugene M.; Imprescia, Richard J.; and Reiswig, Robert D., 3,809,565.

Imura, Toshinori, to Minolta Camera Kabushiki Kaisha. Flash control mechanism for a camera. 3,810,205, Cl. 354-33.000.

Inada, Masami; and Ando, Masamoto, to Aisin Seiki Kabushiki Kaisha. Anti-skid brake control system. 3,809,437, Cl. 303-21.00f.

Index Industries, Inc.: *See—*
Woodward, Herber Jay, 3,809,191.

Indexette Tapes, Inc.: *See—*
Stone, Wayne B., Jr.; and Beaumont, Alan, 3,810,246.

Industrial Development & Design: *See—*
Bennion, Don U.; and West, Leonard R., 3,810,005.

Industrial Nucleonics Corporation: *See—*
Cho, Boong Y.; Sturkol, Elmer W.; and Wier, Keith E., 3,809,903.

Ingemar, Fernlund; and Stig, Hallerback, to SKF Industrial Trading & Development Company B.V. Holder for an outer race of a roller bearing. 3,809,447, Cl. 308-236.000.

Ingenieursbureau Rodehuis & Verloop N.V.: *See—*
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Ingersoll-Rand Company: *See—*
Black, Arthur L., 3,808,911.

Inoue, Izaburo: *See—*
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Institutet for Mikrovagsteknik: *See—*
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Integrated Systems Company: *See—*
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Intel Corporation. *See—*
Hoff, Marcian Edward, Jr., 3,810,127.

Interlake, Inc.: *See—*
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International Business Machines Corporation: *See—*
Ambrico, Louis Edward; Katsafouros, Stavros George; Kleen, Bergert George; and Lamoureux, William Roger, 3,809,947.
Battinger, Utz G.; and Najmann, Knut K., 3,810,123.
Behman, Stephen Barry; and Goldstein, Stephen, 3,810,129.
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Healey, Robert A., 3,810,117.
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International Nickel Company, Inc., The: *See—*
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International Standard Electric Corporation: *See—*
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International Tapetronics Corporation: *See—*
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International Telephone and Telegraph Corporation: *See—*
Clanton, John S., 3,809,908.
Hershberg, David E.; Chaplin, Arthur H.; and Dewland, Joseph F., 3,810,038.
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International Telephone and Telegraph Corporation, mesne: *See—*
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International Video Corporation: *See—*
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Interstab Limited: *See—*
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Intertechnique S.A.: *See—*
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Interx Research Corporation: *See—*
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Inventa AG fur Forschung und Patentverwertung: *See—*
Studinka, Josef; and Gabler, Rudolf, 3,809,682.

Iomec, Inc.: *See—*
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Ipekgil, Ayhan. Automatic control for venetian blind. 3,809,143, Cl. 160-168.000.

Irlam, Philip Sidney: *See—*
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Lythgoe, Stanley; and Irlam, Philip Sidney, 3,809,542.

Ishida, Kengo; Kawai, Masanobu; and Mukai, Noboru, to Kyowa Hakko Kogyo Co., Ltd. Preparation of seasoning agent. 3,809,780, Cl. 426-60.000.

Ishikawa, Seuti: *See—*
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Ishimaru, Toshiyasu, to Osaka University, President of. Process for producing 6-aminopenicillanic acid. 3,809,699, Cl. 260-306.700.

Isotopes, Inc.: *See—*
Seetoo, Winston R.; Weide, Roman K.; and Charland, Telesphore L., 3,808,670.

Itek Corporation: *See—*
Gracia, Robert F.; Laughrey, Richard A.; and Tuohey, Paul F., 3,809,562.
Nellis, David C., 3,809,910.

Ito, Isao. Windshield wiper for vehicles. 3,808,630, Cl. 15-250.420.

Ito, Shinya, to Kabushiki Kaisha Tokai Rika Denki Seisaku. Device for detecting and indicating a difference in hydraulic pressure. 3,810,142, Cl. 340-242.000.

Ito, Tadahiko: *See—*
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Itoh, Kiyoshi: *See—*
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Ivan, Geza: *See—*
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Iwasaki Tsushinki Kabushiki Kaisha; a/k/a Iwatsu Electric Co., Ltd.: *See—*
Ono, Yasuhiro, 3,810,247.

I.W.S. Nominee Company Limited: *See—*
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Jack, James: *See—*
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Jackson, Earl V.: *See—*
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Jackson, James Edward, to Deere & Company. Fuel sediment bowl assembly. 3,809,244, Cl. 210-136.000.

Jackson, Robert B. Fence post support. 3,809,346, Cl. 248-44.000.
Jackson, William Wayne: *See—*
Hook, Richard Wyane; and Jackson, William Wayne, 3,809,164.
Jackson, Winston J., Jr.: *See—*
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Jacob, Gernot, to Swiss Aluminium Ltd. Sacrificial anode. 3,809,640, Cl. 204-197.000.
Jacobs Manufacturing Company, The: *See—*
Cartledge, Charles F., 3,809,033.
Jacobs, Melvin A.; and Taugner, Jack W., to GTE Automatic Electric Laboratories, Incorporated. Automatic distribution of subscriber assistance calls. 3,809,823, Cl. 179-27.00d.
Jacobs, Stanley C., to Aluminum Company of America. Fluid sheathed electrode load for use in a corrosive environment. 3,809,794, Cl. 174-11.0bh.
Jacobs, Thomas A., to Tideland Signal Corporation. Navigational light system. 3,810,150, Cl. 340-340.000.
Jacobsen Manufacturing Company: *See—*
Hoffmeyer, Knud H.; Haffner, Donald G.; and Ecker, Frank A., 3,808,778.
Jaconette, Frank C., Jr., to Hubbell, Harvey, Incorporated. Grounding clip for electrical fixtures. 3,810,069, Cl. 339-14.00r.
Jagid, Bruce E., to Power Conversion, Inc. Battery sealing and component connecting method. 3,809,580, Cl. 136-133.000.
James, Horace A. Leaf and rubbish shovel. 3,809,421, Cl. 294-50.800.
Jamet, Edmond; and Jaquard, Paul, to Societe d'Applications Generales d'Electricite et de Mecanique SAGEM. Emitter and receiver devices for remote control of mining machines. 3,810,098, Cl. 340-170.000.
Japan Exlan Company, Limited: *See—*
Shimoda, Keitaro; Kobayashi, Yutaka,; and Sumi, Takehiko, 3,809,738.
Jaquard, Paul: *See—*
Jamet, Edmond; and Jaquard, Paul, 3,810,098.
Jaquette, Robert D., to Air-Way Manufacturing Company. O-ring mounting machine. 3,808,664, Cl. 29-235.000.
Jarolim, Vaclav; Slama, Karel; and Sorm, Frantisek, to Ceskoslovenska Akademie Ved. Esters of 9-0 XA-2,4-alkadienoic acids. 3,809,710, Cl. 260-410.90r.
Jarry Precision Limited: *See—*
Vadeboncoeur, Leo; and Tremblay, Alain, 3,808,900.
Jarvenson, Erik Borje: *See—*
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Jasovsky, George A.: *See—*
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Javan, Ali; and Feld, Michael S., to Massachusetts Institute of Technology. Apparatus and method for controlling direction of radiation. 3,809,887, Cl. 250-199.000.
Jeffery, Philip Auriol Edgar: *See—*
Beurer, Robert John; and Jeffery, Philip Auriol Edgar, 3,809,334.
Jenkins, John P., to International Tapetronics Corporation. Tape transport with automatic torque motor brake. 3,809,329, Cl. 242-204.000.
Jensen, Jackie L.: *See—*
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Jenssen, Lloyd W.: *See—*
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Jereb, Richard F.; and Anderson, Philip A., to Outboard Marine Corporation. Capacitor triggered ignition system. 3,809,044, Cl. 123-148.00e.
Jereb, Richard F., to Outboard Marine Corporation. Non-magnetized ceramic magnetic assembly. 3,810,056, Cl. 335-302.000.
Jesernig, William J.; and Arstikaitis, Arunas A., to American Standard Inc. Dust collector. 3,808,776, Cl. 55-300.000.
Jimenez, Antonio: *See—*
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Jin, Kunio: *See—*
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Johnson, Axel R.; Wolk, Ronald H.; and Nonghri, Govanon, to Hydrocarbon Research, Inc. Multiple stage hydrodesulfurization of residuum. 3,809,644, Cl. 208-210.000.
Johnson, Delf W., Poole & Storm, Architects: *See—*
Bottjer, Richard E.; Johnson, Delp W.; Poole, William F.; and Storm, James P., 3,808,754.
Johnson, Delp W.: *See—*
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Johnson, Earl Clinton, to Deere & Company. Collapsible link for a tree shear. 3,808,909, Cl. 74-585.000.
Johnson, Marvin M.; and Kuper, Donald G., to Phillips Petroleum Company. Dehydration of 3-methyl-3-buten-1-0l. 3,809,727, Cl. 260-681.000.
Johnson, Oliver D.; and Maynard, Kenneth B., to International Business Machines Corporation. Continuous card form. 3,809,410, Cl. 281-5.000.
Johnston, Billy Ray; and Schescke, William O. Datachable diver's weight. 3,808,824, Cl. 61-70.000.
Johnston, James Stewart; and Fellow, David Frank, to Rosemount Engineering Company Limited. Analogue to digital converters. 3,810,151, Cl. 340-347.0ad.
Johnston, Walter Daniel, to Bell Canada. Means and method for telephone line disconnection in frequency division multiplexing. 3,809,818, Cl. 179-15.0by.
Jolly, Michael D.; Jasovsky, George A.; Ceglie, Gaetano J.; Nacci, Anthony T.; and Schechter, Harold, to General Foods Corporation. Method for producing enhanced soluble foodstuffs. 3,809,770, Cl. 426-362.000.
Jones, Bowan. Swivel caster supported exercising handle apparatus. 3,809,393, Cl. 272-57.00j.
Jones, Gordon: *See—*
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Jones, Harry S. Doublet gem construction. 3,808,836, Cl. 63-32.000.
Jones, Howard W.; and Whitmore, Robert A. Process for preparing as food adjunct for callagen. 3,809,772, Cl. 426-364.000.
Jones, Lewis H., to Food Packers Equipments Co. Inc. Food packing machine. 3,809,132, Cl. 141-122.000.
Jones, Melvin A. Die casting apparatus. 3,809,531, Cl. 432-225.000.
Jones, Robert S.; and Jones, Wesley E. Flooring system for sties and other animal shelters. 3,809,014, Cl. 119-28.000.
Jones, Robert Wayne: *See—*
Delaney, Glenn Allen, Jr.; and Jones, Robert Wayne, 3,809,179.
Jones, Wesley E.: *See—*
Jones, Robert S.; and Jones, Wesley E., 3,809,014.
Jones, William Stanley; and Hartmann, Clinton Sylvester, to Texas Instruments Incorporated. Acoustic surface wave transducer configuration for reducing triple transit signals. 3,810,257, Cl. 333-30.00r.
Jongerius, Hermanus Maria; and Van der Wolk, Rein Willemse, to U.S. Philips Corporation. Low-pressure mercury vapour discharge lamp. 3,809,944, Cl. 313-227.000.
Jordan, James Redmon, to National Research Development Corporation. Digital data processing apparatus. 3,810,113, Cl. 340-172.500.
Joslin, Allen: *See—*
Green Peter L.; Lenfesty, Gordon A.; Talbot, Edmund H.; Joslin, Allen; and Kovacevic, Vukasin, 3,808,761.
Joslyn, John V. Musical instrument. 3,809,793, Cl. 84-404.000.
Jossic, Alain Francois, to Societe Honeywell Bull. Heating indicating device of an electric motor. 3,809,960, Cl. 317-13.00b.
Jost, Ernest M., to Texas Instruments, Incorporated. Relay. 3,810,059, Cl. 337-25.000.
K-Line Industries, Inc.: *See—*
Kammeraad, James A., 3,809,046.
Kabat, Jules M.; and Beggs, James H., to Integrated Systems Company. Method and system for transmitting data and indicating room status. 3,810,096, Cl. 340-147.00r.
Kabil, Adel J., to Aktiengesellschaft Jungbunzlauer Spiritus- und Chemische Fabrik. Process for the production of citric acid by submerged fermentation. 3,809,612, Cl. 195-36.00r.
Kabushiki Kaisha Komatsu Seisakusho: *See—*
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Kabushiki Kaisha Suwa Seikosha: *See—*
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Kabushiki Kaisha Tokai Rika Denki Seisaku: *See—*
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Kaerwer, Howard E., Jr.: *See—*
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Kalet, Irving; and Weinstein, Stephen Brant, to Bell Telephone Laboratories, Incorporated. Inband generation of digital signal waveforms. 3,810,021, Cl. 325-141.000.
Kali-Chemie Aktiengesellschaft: *See—*
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Kalkowski, Kurt-Ulrich. Utensil having stabilizers for preventing spraying with frying pans, or the like. 3,809,281, Cl. 220-44.00r.
Kalle Aktiengesellschaft: *See—*
Heist, Hans; and Silbereisen, Dieter, 3,809,387.

Moraw, Roland; and Schadlich, Gunther, 3,809,473.
Kallio, Frank H., to Sperry Rand Corporation. Bipolar digital-to-analog converter. 3,810,157, Cl. 340-347.0da.
Kaltenhauser, Ludwig A.; and Tschuggnal, Alfred F. Seal cap. 3,809,277, Cl. 215-320.000.
Kaminow, Ivan Paul: *See*—
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Kamiya, Nobuyoshi, to Toyo Enterprises Kabushiki Kaisha. Vehicle drying apparatus. 3,808,703, Cl. 34-229.000.
Kammeraad, James A., to K-Line Industries, Inc. Valve guide stabilizing and sealing insert. 3,809,046, Cl. 123-188.0gc.
Kamogawa, Toshiro: *See*—
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Kaneko, Eiji: *See*—
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Kanter, Jerome J. Protecting ferrous base metal articles against corrosion by treatment with niobium oxide. 3,809,572, Cl. 117-127.000.
Kantor, Frederick W. Rotary thermodymanic apparatus. 3,808,828, Cl. 62-116.000.
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Kao Soap Co., Ltd.: *See*—
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Karatjas, Manual: *See*—
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Karsten, Fred W.; Evans, James D.; and Pool, Sam Lee, to Kewp, Inc. Electronic line indicator apparatus. 3,810,148, Cl. 340-323.000.
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Kasprzak, Vincent, to Arvin Industries, Inc. Video bandwidth reduction. 3,809,805, Cl. 178-6.60a.
Kato, Mihoru; and Nagasawa, Masao, to Nippondenso Co., Ltd. Ignition device for use in multiple cylinder internal combustion engine. 3,809,041, Cl. 123-148.00e.
Katsafouros, Stavros George: *See*—
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Katz, Leonard R.; Landerman, Edgar I.; and Desmarchais, Walter E., to Westinghouse Electric Corporation. Reactor vessel annealing apparatus. 3,809,608, Cl. 176-87.000.
Kaugars, Girts, to Upjohn Company, The. Thiophenecarbonyl chloride phenylhy drazones. 3,809,703, Cl. 260-332.500.
Kavick, Edward M.: *See*—
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Kawai, Masanobu: *See*—
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Kawakami, Kanji; and Kaneko, Eiji, to Hitachi, Ltd. Control circuit of recording and reproducing signals to and from magnetic transducers for magnetic memory apparatus. 3,810,135, Cl. 360-62.000.
Kawamura, Eiji; and Taki, Hiroyuki, to Kabushiki Kaisha Komatsu Seisakusho. Hydraulic control system in a power shift transmission of an endless trail type tractor. 3,808,812, Cl. 60-484.000.
Kazoaka, Kenichi, to Aisin Seiki Company Limited. Door lock mechanism. 3,809,416, Cl. 292-216.000.
Kean Manufacturing Corporation: *See*—
Strain, William E., 3,809,139.
Keener, Arthur; Bradford, Larry David; Gary, Laverne E.; McLeon, John W.; and Carter, Billy W., to Lone Star Container Corporation. Reel forming apparatus. 3,808,958, Cl. 93-49.00r.
Kehe, Alfred W., to Continental Can Company, Inc. Protective score shield for easy opening container. 3,809,283, Cl. 220-54.000.
Kehr, Clifton L.: *See*—
Magnotta, Frank; Ketley, Arthur D.; and Kehr, Clifton L., 3,809,633.
Keley, Roger T.: *See*—
Kiley, Joyce M.; and Keley, Roger T., 3,809,757.
Keller, Robert A.: *See*—
Mitchner, Joseph L.; Keller, Robert A.; and Graham, Clyde B., 3,808,669.
Keller, Wolfgang: *See*—
Baumgartner, Werner; Keller, Wolfgang; and Schnoeller, Manfred, 3,809,846.
Kelly, Larry. Gun-leveling device. 3,808,943, Cl. 89-14.00c.
Kelsey-Hayes Company: *See*—
Evans, Anthony C., 3,809,190.
KemaNord AB: *See*—
Mattsson, Ove Henning; and Bertilsson, Britt-Marie Elisabeth, 3,809,718.
Kemp, Jacob D.; and Mulaskey, Bernard F., to Chevron Research Company. Catalyst rejuvenation. 3,809,728, Cl. 260-683.680.
Kenagy, William L., to Wheelabrator Corporation, The. Mechanical finishing and media therefor. 3,808,747, Cl. 51-164.500.
Kendall, Burt C., to Crown Zellerback Corporation. Protected lumber package and method of making same. 3,809,223, Cl. 206-204.000.
Kendall Company, The: *See*—
Tautvaisas, Bonaventura, 3,808,639.
Kennecott Copper Corporation: *See*—
Michaelson, Stanley D.; and Broadbent, Carl D., 3,809,430.
Kennedy, Sterling R. Sewage treatment apparatus. 3,809,245, Cl. 210-207.000.
Kennington, Joseph B., to Francis P. Brennan. Pakcaging brace for washing machines and the like. 3,809,232, Cl. 206-320.000.
Kent, Allan R.: *See*—
Kotok, Alan; Kent, Allan R.; and Gross, David A., 3,810,110.
Kenway Engineering, Incorporated: *See*—
Pipes, George R., 3,809,259.
Kerb, Ulrich; Wiechert, Rudolf; Eder, Ulrich; and Berndt, Hans-Detlef, to Hoffmann-La Roche Inc. 18-(Alkyl-acylamino)-14beta,16beta,20-trihydroxy steroids and methods for their preparation. 3,809,690, Cl. 260-239.500.
Kershaw, Thomas. Air permeability tester. 3,808,876, Cl. 73-38.000.
Kershaw, Thomas N., to Albany International Corporation. Electric outlet sentinel. 3,809,961, Cl. 317-18.00b.
Kerstetter, Virginia Ann; and Mizell, Louis Richard, to I.W.S. Nominee Company Limited. Method for making pile fabric. 3,809,589, Cl. 156-68.000.
Kesler, Johan Peter: *See*—
Khouw, Boen Tie; and Kesler, Johan Peter, 3,809,748.
Ketcham & McDougall, Inc.: *See*—
Osland, James M., 3,808,926.
Ketley, Arthur D.: *See*—
Magnotta, Frank; Ketley, Arthur D.; and Kehr, Clifton L., 3,809,633.
Kewanee Oil Company: *See*—
Szalanczy, Andras; Shrader, Erwin F.; Shoffner, Bruce M.; and Chamberlain, James D., 3,809,901.
Kewp, Inc.: *See*—
Karsten, Fred W.; Evans, James D.; and Pool, Sam Lee, 3,810,148.
Khaja, Farees U.: *See*—
Unger, John J.; Augustine, Robert J.; and Khaja, Farees U., 3,809,285.
Khouw, Boen Tie; and Kesler, Johan Peter, to Canada Packers Limited. Kallikrein isolation and purification. 3,809,748, Cl. 424-110.000.
Kiemle, Horst: *See*—
Pekau, Dietlind; and Kiemle, Horst, 3,809,455.
Kiffmeyer, William W., to Allen-Bradley Company. Programmable matrix controller. 3,810,118, Cl. 340-172.500.
Kiley, Joyce M.; and Keley, Roger T., to Societe d'Assistance Technique pour Produits Nestle S.A. Flavouring agent. 3,809,757, Cl. 426-223.000.
Kilgore, Lee A.; Ratcliffe, Robert E. G.; Smith, Henry L.; and Strait, Bernard S., Jr., to Westinghouse Electric Corporation. Starting system for power plants. 3,809,914, Cl. 290-38.000.
Killen, Dennis: *See*—
Blackwell, James Brian; Killen, Dennis; and Hodgson, Victor Francis, 3,809,512.
Kilroy, Henry P.; and Murphy, Harold J., to Potter Instrument Company, Inc. Helical bar printer logic circuitry. 3,810,195, Cl. 346-101.000.
Kimberly-Clark Corporation: *See*—
Kraus, James J., 3,808,700.
Kimmet, Gary J.: *See*—
Auble, Ronald E.; and Kimmet, Gary J., 3,809,870.
Kimura, Eiichi. Wall aerosol spray. 3,809,319, Cl. 239-274.000.
Kimura, Hiroshiro; Arimoto, Heiji; Nara, Hirohisa; Miyamatsu, Tsugio; and Kitajima, Mitsuo, to Unitaka Ltd. Yarn carrier for a weaving machine. 3,809,131, Cl. 139-125.000.
Kindig, Guilford E.: *See*—
Adamski, Henry S.; and Kindig, Guilford E., 3,810,210.
Kioritz Corporation: *See*—
Kobayashi, Torao; and Miyata, Hiromasa, 3,809,185.
Kirkpatrick, George M., to Syracuse University Research Corporation. PPI display system with deflection modulation to reduce spoking. 3,810,173, Cl. 343-5.00r.
Kirn, Manfred: *See*—
Gotsch, Dieter; Hahner, Reinhard; Kirn, Manfred; and Lederer, Hans, 3,808,904.
Kistler Instrumente AG: *See*—
Sonderegger, Hans C., 3,809,488.
Kitai, Kiyoshi; Onda, Eiichi; Koyama, Mitsuo; Nagaoka, Shinji; and Nakagawa, Tadashi, to Seiko Koki Kabushiki Kaisha. Operating device for focal plane shutter blades for camera. 3,810,223, Cl. 354-250.000.
Kitai, Kiyoshi; Onda, Eiichi; Koyama, Mitsuo; Nagaoka, Shinji; and Nakagawa, Tadashi, to Sieko Koki Kabushiki Kaisha. Focal plane shutter for camera. 3,810,224, Cl. 354-250.000.
Kitajima, Mitsuo: *See*—
Kimura, Hiroshiro; Arimoto, Heiji; Nara, Hirohisa; Miyamatsu, Tsugio; and Kitajima, Mitsuo, 3,809,131.
Kittredge, Thomas D.: *See*—
Pressman, Gerald L.; and Kittredge, Thomas D., 3,809,556.
Pressman, Gerald L.; and Kittredge, Thomas D., 3,809,557.

Klahr, Carl N. Optical processor for convolution filtering. 3,809,873, Cl. 235-181.000.
Klancnik, Adolph V. Machine tool feed apparatus. 3,809,257, Cl. 214-8.50c.
Klashka, John A.: *See*—
De Voy, David D.; Barlow, George J.; and Klashka, John A., 3,810,231.
Klass, Donald Leroy; and Azukas, John Joseph. Method and means for natural gas detection. 3,809,615, Cl. 195-103.50r.
Kleen, Bergert George: *See*—
Ambrico, Louis Edward; Katsafouros, Stavros George; Kleen, Bergert George; and Lamoureux, William Roger, 3,809,947.
Kleidermacher, Moishe: *See*—
Zieve, Robert M.; Maginnis, Christopher L.; and Kleidermacher, Moishe, 3,810,119.
Klein, Enrique J.: *See*—
Klein, Enrique J.; and Lee, Myron E. (said Lee assor. to said), 3,809,997.
Klein, Enrique J. Brushless generator. 3,809,936, Cl. 310-171.000.
Klein, Enrique J.; and Lee, Myron E., said Lee assor. to said Klein, Enrique J. Generator system with linear reversible output. 3,809,997, Cl. 322-79.000.
Klein, Gerhart P., to Mallory, P. R., & Co., Inc. Method for making an anode. 3,809,552, Cl. 75-208.00r.
Klein, Harold T.: *See*—
Porter, Wilson B.; and Klein, Harold T., 3,808,916.
Klein, Richard F. Remote control apparatus. 3,809,115, Cl. 137-344.000.
Kleven, Lowell A.: *See*—
Smoot, Charles H.; Kleven, Lowell A.; and Wirth, Gary J., 3,808,977.
Klimek, Boleslaw, to Berg Mfg. & Sales Co. Modulating application valve. 3,809,441, Cl. 303-52.000.
Kliment, Charles K.: *See*—
Tauman, Harvey; Sklover, Isadore T.; Tauman, Irving; and Kliment, Charles K., 3,808,686.
Klockner-Werke AG: *See*—
Bell, Gunter; and Gehrmann, Werner, 3,808,946.
Klopfer, Howard J.: *See*—
White, Dwain M.; and Klopfer, Howard J., 3,809,673.
Knaak, Hans, to Rexroth, G. L., GmbH. Regulating apparatus for a hydraulic machine. 3,808,952, Cl. 91-505.000.
Knaak, Ruediger, to Koppers-Wistra-Ofenbau GmbH. Method and arrangement for jointly combusting household refuse and sewage sludge. 3,808,989, Cl. 110-14.000.
Knapp, Heinrich; and Schwartz, Reinhard, to Bosch, Robert, G.m.b.H. Fuel injection apparatus. 3,809,036, Cl. 123-119.00r.
Knapp, Peter A. Piston assembly. 3,808,956, Cl. 92-172.000.
Knapp, William: *See*—
Rivkowich, Harold; Rehman, Warren C.; Knapp, William; and Borders, Bert, 3,809,769.
Knappe, Hartmut: *See*—
Erdman, Jurgen; and Knappe, Hartmut, 3,809,891.
Knappstein, Johannes; and Voges, Jan, to Still, Carl, Firma. Apparatus for emptying coke furnace batteries. 3,809,622, Cl. 202-263.000.
Knecht, Fritz, to Tecmed A.G. Apparatus for grinding of knives in particular of a hand-knife and cutter-knife. 3,808,746, Cl. 51-128.000.
Knight, John W., to Knight Motor Corporation. Refuse collecting and dispensing vehicle. 3,809,267, Cl. 214-508.000.
Knight Motor Corporation: *See*—
Knight, John W., 3,809,267.
Know-Bremse KG: *See*—
Schelle, Axel, 3,809,252.
Knowsley Engineering Limited: *See*—
Lawrence, Christopher John, 3,809,368.
Kobauashi, Nobuyuki: *See*—
Aihara, Ryuzo; Ota, Susumu; and Kobauashi, Nobuyuki, 3,810,025.
Kobayashi, Torao; and Miyata, Hiromasa, to Kioritz Corporation. Oil feed pump of chain saw. 3,809,185, Cl. 184-15.00r.
Kobayashi, Yutaka.: *See*—
Shimoda, Keitaro; Kobayashi, Yutaka.; and Sumi, Takehiko, 3,809,738.
Kobe Steel Ltd.: *See*—
Miyanishi, Noritake; Kubota, Shigeru; Baba, Hirotoshi; and Takahashi, Masahiro, 3,809,201.
Yamaguchi, Yoshihiro; Matsushita, Tomiharu; Noguchi, Masataka; Nakagawa, Junichi; and Hasegawa, Hakumi, 3,808,860.
Kober, Drago, to Liquid Gas Anlagen Union GmbH. System for use with storage tanks for receiving, delivery or retaining liquified gas. 3,809,153, Cl. 165-62.000.
Koboyshi, Katsumi, to Kabushiki Kaisha Yashica. Motion picture camera with electronic circuitry for single-frame photography. 3,809,466, Cl. 352-169.000.
Koch, Friedrich-Karl; and Rahn, Oskar, to Peltzer & Ehlers. Workpiece conveyor for multistage press. 3,809,255, Cl. 214-1.0bd.
Koch, Hansjorg: *See*—
Feier, Gunter; Koch, Hansjorg; and Suchy, Walter, 3,809,301.
Kock, Theodorus Joannes: *See*—
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Kohaszati, Lenin: *See*—
Giflo, Henrik; Enekes, Sandor; Zambo, Pal; Sziklavari, Janos; Farkas, Istvan; Ivan, Geza; Molnar, Jozsef; and Vamosi, Jozsef, 3,809,550.
Kohner Bros. Inc.: *See*—
Stubbmann, Albert, 3,808,719.
Kohnle, Josef: *See*—
Mueller-Tamm, Heinz; Urban, Friedrich; Frielingsdorf, Hans; Nickl, Johann; Schweier, Guenther; and Kohnle, Josef, 3,809,657.
Koike, Toshio, to Hitachi, Ltd. Stator for single-phase induction motor. 3,809,937, Cl. 310-184.000.
Koinuma, Tokuju, to Tokyo Shibaura Electric Co., Ltd. Magnetron. 3,809,950, Cl. 315-39.710.
Kolb, Robert C.: *See*—
MacKissic, Albert E.; and Kolb, Robert C., 3,809,323.
Kolderup, Edward; and Eidsmo, Jacob, to Anlegg & Maskin A/S. Mobile drill rig. 3,809,344, Cl. 248-16.000.
Kolflaath, Jorgen August: *See*—
Aas, Helge Hakonsonn; and Kolflaath, Jorgen August, 3,809,548.
Kollar, Ernest P.; Levine, Joel M.; Tagawa, James M.; and Tiao, Hui-Li, to International Business Machines Corporation. Tape transport. 3,809,336, Cl. 242-202.000.
Komaki, Saiji. Apparatus for manufacturing a light-weight concrete panel with pattern designs on its surface. 3,809,516, Cl. 425-150.000.
Komatsu, Hajime: *See*—
Nimura, Takao; Jin, Kunio; and Komatsu, Hajime, 3,809,563.
Komatsu, Masakazu: *See*—
Kubo, Shoichi; and Komatsu, Masakazu, 3,808,678.
Komendowski, Henry, to Automatic Liquid Packaging, Inc. Mixing containers. 3,809,289, Cl. 222-83.000.
Kondo, Setsuo: *See*—
Shibata, Katsuhiko; Seika, Yajuro; Sakamoto, Iwao; Yamada, Kango; and Kondo, Setsuo, 3,808,631.
Koninklijke Industrieele Maatschappij Noury & Van Der Lande N.V. Deventer: *See*—
Havinga, Reginoldus; and Swaters, Pieter Dirk, 3,809,707.
Konishiroku Photo Industry Co., Ltd.: *See*—
Matsuo, Shunji; Sato, Shui; Endo, Takaya; Kasai, Keiji; and Inoue, Izaburo, 3,808,945.
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Konrad, Franz: *See*—
Chough, Euiwon; Deverse, Frank T.; Konrad, Franz; Kurtz, John A.; and Manchester, Russell C., 3,809,050.
Kooi, Edward; Odynski, George; and Stage, Leo J., to Arvey Corporation. Laminates and adhesive compositions. 3,809,603, Cl. 161-186.000.
Koppers-Wistra-Ofenbau GmbH: *See*—
Knaak, Ruediger, 3,808,989.
Kopsch, Heinz: *See*—
Schuller, Reinhard; and Kopsch, Heinz, 3,809,907.
Kordik, Kenneth S.: *See*—
Kuo, Benjamin C.; and Kordik, Kenneth S., 3,809,990.
Kosowsky, David I., to Damon Corporation. Container unit for liquid sample. 3,809,068, Cl. 128-2.00f.
Kostelnicek, Richard J., to Esso Production Research Corporation. Self-righting geophone. 3,810,083, Cl. 340-8.0lf.
Kotok, Alan; Kent, Allan R.; and Gross, David A., to Digital Equipment Corporation. Computer system overlap of memory operation. 3,810,110, Cl. 340-172.500.
Kovacevic, Vukasin: *See*—
Green Peter L.; Lenfesty, Gordon A.; Talbot, Edmund H.; Joslin, Allen; and Kovacevic, Vukasin, 3,808,761.
Kovach, George F.: *See*—
Leister, Edwin S.; Kovach, George F.; and Robinson, William m., 3,810,252.
Koyama, Mitsuo: *See*—
Kitai, Kiyoshi; Onda, Eiichi; Koyama, Mitsuo; Nagaoka, Shinji; and Nakagawa, Tadashi, 3,810,223.
Kitai, Kiyoshi; Onda, Eiichi; Koyama, Mitsuo; Nagaoka, Shinji; and Nakagawa, Tadashi, 3,810,224.
Kozacka, Frederick J., to Chase-Shawmut Company, The. High-voltage fuse having full range clearing ability. 3,810,062, Cl. 337-161.000.
Kozinski, Richard C.: *See*—
Atkinson, Ward J.; and Kozinski, Richard C., 3,808,830.
Kozu, Isao; Kurihara, Hidetoshi; and Hino, Tetsuo, to Matsushita Electric Industrial Co. Ltd. Automatic cassette changer. 3,810,239, Cl. 360-92.000.
Kraftwerk Union Aktiengesellschaft: *See*—
Engelke, Wilhelm; and Purr, Gerhard, 3,808,819.
Kral, Rudolf; and Bruckner, Hermann, 3,809,016.
Kral, Edward F., Jr. Swim starting block with adjustable handle. 3,809,392, Cl. 272-57.00r.
Kral, Rudolf; and Bruckner, Hermann, to Kraftwerk Union Aktiengesellschaft. Steam generator with flat combustion chamber bottom. 3,809,016, Cl. 122-6.00a.
Kramer, Marvin W.: *See*—
Goldberg, Eugene J.; Kramer, Marvin W.; and Licci, Joseph R., 3,809,099.
Kramer, Vance M. Apparatus for making corrugated tubing. 3,809,522, Cl. 425-387.000.

Kramm, Douglass J., to Fuller Company. Apparatus for cooling solid particulate material. 3,809,528, Cl. 432-80.000.

Krapcho, Johy: *See—*
Fried, Josef; Pribyl, Edward J.; and Krapcho, Johy, 3,809,720.

Kraus, James J., to Kimberly-Clark Corporation. Rotary drying drum and method. 3,808,700, Cl. 34-124.000.

Kraus, Peter: *See—*
Helmcke, Conrad; Hermann, Walter; and Kraus, Peter, 3,809,803.

Krause, Gerhard, to Siemens Aktiengesellschaft. Integrated attenuation elements. 3,810,049, Cl. 333-81.00r.

Krause, Stephen R.; and Hendler, Nelson, to Pro-Lect, Inc. Solid state A/C motor protector system. 3,809,985, Cl. 318-490.000.

Krauss-Maffei Aktiengesellschaft: *See—*
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Krauss-Maffer AG: *See—*
Schuller, Reinhard; and Kopsch, Heinz, 3,809,907.

Krawiec, Donald Michael; and Bevilacqua, Frank, to Combustion Engineering, Inc. Twisted tape flow deflector in a nuclear reactor fuel assembly. 3,809,609, Cl. 176-78.000.

Krawitt, Donald R. Medical sensor device for locating calculi in body cavities. 3,809,066, Cl. 128-2.00r.

Krenke, Norman O.; and Sims, De Witt, to Baker Perkins Inc. Bakery product depanning apparatus. 3,809,265, Cl. 214-309.000.

Kretschmer, Heinz: *See—*
Daumueller, Hans; and Kretschmer, Heinz, 3,809,880.

Krewson, Neil N.; Tait, John B.; and Updike, Bruce M., to International Business Machines Corporation. Processor utilizing a holographic array and a content addressable storage unit for high speed searching. 3,810,108, Cl. 340-172.500.

Kriestan, Wolfgang; and Heinz, Scholten, to Chemische Werke Huls Aktiengesellschaft. Polylaurylactam with improved resistance to the effects of heat, oxygen and light. 3,809,678, Cl. 260-45.85r.

Krimm, Heinrich: *See—*
Lenz, Gunther; Krimm, Heinrich; and Schnell, Hermann, 3,809,679.

Kristen, Reiner; and Liska, Manfred, to Siemens Aktiengesellschaft. Electric motor construction. 3,809,935, Cl. 310-68.000.

Krock, Richard H.; and Richmond, William J., to Mallory, P. R., & Co., Inc. Method of making hollow cast articles from metal alloys having long freezing ranges. 3,808,671, Cl. 29-526.500.

Kroh, Elizabeth H.: *See—*
Plunkett, George B.; Plunkett, Patricia M.; Kroh, Loren H.; and Kroh, Elizabeth H., 3,808,855.

Kroh, Loren H.: *See—*
Plunkett, George B.; Plunkett, Patricia M.; Kroh, Loren H.; and Kroh, Elizabeth H., 3,808,855.

Krukow, Eugene J.: *See—*
Gardner, Frank H.; Stroup, Norman G.; and Krukow, Eugene J., 3,808,784.

Krutsinger, Jack K.; Bullai, Carl N.; and Munson, Robert E., to Ball Brothers Research Corporation. Dual slot antenna device. 3,810,183, Cl. 343-708.000.

Krzyminski, Harald, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Solid agent for boriding metals. 3,809,583, Cl. 148-6.350.

Kubo, Shoichi; and Komatsu, Masakazu, to Matsushita Electric Industrial Co., Ltd. Method of making pressure-sensitive resistor element. 3,808,678, Cl. 29-610.000.

Kubota, James: *See—*
Zajac, Donald M.; and Kubota, James, 3,810,073.

Kubota, Shigeru: *See—*
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Kuhlmann-Schafer, Wilhelm, to Preussag Aktiengesellschaft. Process for the production of permanent magnets. 3,809,145, Cl. 164-49.000.

Kuhn, Jean. Arrangement for making knotted chain stitch seam. 3,808,994, Cl. 112-199.000.

Kunert, Heinz; Moebs, Heinz; and Sauer, Gerd, to Saint-Gobain Industries. Motor vehicle windshield with incorporated antenna. 3,810,180, Cl. 343-713.000.

Kuo, Benjamin C.; and Kordik, Kenneth S., to Warner Electric Brake and Clutch Company. Electric motor adapted for both stepping and continuous operation. 3,809,990, Cl. 318-696.000.

Kupcikevicius, Vytautas; and Myles, Michael Joseph, to Union Carbide Corporation. Method and apparatus for producing a large sausage product having a pre-flattened end. 3,808,638, Cl. 17-35.000.

Kuper, Donald G.: *See—*
Johnson, Marvin M.; and Kuper, Donald G., 3,809,727.

Kurauchi, Noritaka: *See—*
Nakahara, Tsuneo; Kurauchi, Noritaka; and Nagao, Tachiro, 3,810,186.

Kurick, James F., to Libby-Owens-Ford Company. Glass shipping rack. 3,809,234, Cl. 206-448.000.

Kurihara, Hidetoshi: *See—*
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Kuris, Arthur: *See—*
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Kuroda, Masataka: *See—*
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Kurosaka, Takashi: *See—*
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Kurtin, Stephen L.: *See—*
Goldman, Arnold J.; Kurtin, Stephen L.; and Mead, Carver A., 3,810,107.

Kurtz, Clark Nelson; and De Palma, James John, to Eastman Kodak Company. Radiation-redistributive devices. 3,809,457, Cl. 350-128.000.

Kurtz, John A.: *See—*
Chough, Euiwon; Deverse, Frank T.; Konrad, Franz; Kurtz, John A.; and Manchester, Russell C., 3,809,050.

Kurtz, Leonard D.: *See—*
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Kushmuk, Walter P.: *See—*
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Hutchinson, William Y.; and Kushmuk, Walter P., 3,809,171.

Kuwabara, Kooji: *See—*
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Kuwabara, Masayoshi: *See—*
Tateisi, Tamotu; Ueda, Shigeo; and Kuwabara, Masayoshi, 3,809,128.

Kwong, Michael, to Canadian Marconi Company. Indicator pointer. 3,809,877, Cl. 240-1.01p.

Kyoto University: *See—*
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Kyowa Hakko Kogyo Co., Ltd.: *See—*
Ishida, Kengo; Kawai, Masanobu; and Mukai, Noboru, 3,809,780.
Takayama, Kenichiro; and Tomiyama, Tomoko, 3,809,611.

Labofina S.A.: *See—*
Hanotier, Jacques Daniel Victor; and Hanotier, Monique Josephe Simone, 3,809,715.
Van Doorne, Guy Camille, 3,809,649.

Laessig, John, to Gilbreth Company. Heat shrink tunnel for ensuring uniform shrinkage of heat shrinkable bands on articles of various sizes. 3,808,702, Cl. 34-218.000.

Lafosse, Claude, to Saint-Gobain Carnaud Interplastic. Apparatus for blow moulding. 3,809,521, Cl. 425-326.00b.

Lafrate, Pasco F.; and Relyea, Vincent L., Jr., to International Business Machines Corporation. Continuous processing for substrate manufacture. 3,808,680, Cl. 29-625.000.

Lake, Graham Albert John: *See—*
Ryffin-Hughes, John Malcolm; Harding, Brian; and Lake, Graham Albert John, 3,809,052.

Lambert, Adelor A. Combination signalling and advertising system. 3,810,164, Cl. 340-332.000.

Lamm, Heinz, to Daimler-Benz Aktiengesellschaft. Rotary-piston injection-type internal combustion engine. 3,809,021, Cl. 123-8.090.

Lamm, Heinz, to Daimler-Benz AG. Rotary piston internal combustion engine, especially of trochoidal construction. 3,809,509, Cl. 418-60.000.

LaMoreux, Clarence E., to Associated International Corporation. Testing and measuring apparatus for vehicle wheel front end assembly. 3,808,695, Cl. 33-169.00r.

Lamoureux, William Roger: *See—*
Ambrico, Louis Edward; Katsafouros, Stavros George; Kleen, Bergert George; and Lamoureux, William Roger, 3,809,947.

Lance, Bruce J. Tube bending apparatus. 3,808,856, Cl. 72-7.000.

Lance, Drew R., to California Microwave, Inc. Microwave source. 3,810,046, Cl. 332-19.000.

Land, Edwin H.; and Douglas, Lawrence M., to Polaroid Corporation. Automatic return mechanism for manually adjustable trim assembly. 3,810,201, Cl. 354-23.000.

Landen, William James, to Eyelet Specialty Company. Plastic bottle and cap construction. 3,809,276, Cl. 215-332.000.

Landerman, Edgar I.: *See—*
Katz, Leonard R.; Landerman, Edgar I.; and Desmarchais, Walter F., 3,809,608.

Landry, James A. Ice rink. 3,808,831, Cl. 62-235.000.

Landstingens Inkopscentral: *See—*
Thorsson, Lars-Ake Olof; and Jarvenson, Erik Borje, 3,809,577.

Lane, Byron D. Vent mounting device. 3,809,350, Cl. 248-57.000.

Lang, Charles W.; and O'Hara, Peter J., to Singer Company, The. Digital position sensor. 3,810,136, Cl. 340-199.000.

Langlois, Jacques: *See—*
Billarant, Patrick; Goubeau, Robert; and Langlois, Jacques, 3,808,648.

Lanpheer, Richard A., to Brunswick Corporation. Tuning arrangement for outboard motor. 3,808,807, Cl. 60-313.000.

Lapidus, Herbert, to Combe Incorporated. Depilation device. 3,808,637, Cl. 17-1.00d.

Lapins, Daniel W.: *See—*
Bowman, Cader E.; and Lapins, Daniel W., 3,809,054.

Larson, Lester M. Thermoplastic splint or cast. 3,809,600, Cl. 161-109.000.

Lass, James L.: *See—*
Smith, Bart A.; Lass, James L.; and Venier, Dominic A., 3,809,610.

Lauckhardt, Gerhard: *See—*
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Laughrey, Richard A.: *See—*
Gracia, Robert F.; Laughrey, Richard A.; and Tuohey, Paul F., 3,809,562.

Lauterbach, Heinrich, to Trola-Kunststoffer-Zeugnisse GmbH & Co. Furniture fitting, specifically for detachable suspension of a sliding door from a guide rail. 3,808,633, Cl. 16-87.00r.

Law, John M.; Stricker, Alfred A.; and Von Kaenel, Walter. Automatic pin insertion and bonding to a metallized pad on a substrate surface. 3,808,681, Cl. 29-628.000.
Lawrence, Christopher John, to Knowsley Engineering Limited. Marine winch. 3,809,368, Cl. 254-150.00r.
Lawson, James O.; and Thompson, David F., to GTE Sylvania Incorporated. Temperature compensated fluid sensor. 3,810,143, Cl. 340-244.00r.
Le Frere, Jean-Paul: *See—*
Carbonnel, Henri; and Le Frere, Jean-Paul, 3,809,379.
Leach, John M. Case palletizer. 3,809,254, Cl. 214-6.00p.
Leal, Fausto: *See—*
Vergara, Jose D.; Galvan, Ramon; and Leal, Fausto, 3,810,253.
Leatherman, Alfred F., to Heller, William C., Jr. Magnetic through-field apparatus and process for printing by imbedding particles in a record medium. 3,810,190, Cl. 346-74.0mp.
Lebra, Jacques: *See—*
Rouge, Serge; and Lebra, Jacques, 3,808,898.
Lederer, Hans: *See—*
Gotsch, Dieter; Hahner, Reinhard; Kirn, Manfred; and Lederer, Hans, 3,808,904.
Lee, Kyu-Yawp. Urea supplemented paunch content with trichloroacetic acid protein precipitant. 3,809,779, Cl. 426-335.000.
Lee, Myron E.: *See—*
Klein, Enrique J.; and Lee, Myron E., 3,809,997.
Lee, Raymond, Organization, Inc.: *See—*
Saucier, Len, 3,808,894.
Lee, Raymond, Organization, Inc., The: *See—*
Ciurea, Serban, 3,808,825.
Clouse, Leland Francis, 3,810,144.
Haradyn, Dan, 3,809,409.
Lindsten, George O., 3,808,617.
Rundberg, Sten I., 3,809,321.
Lee, Raymond, Organizations, Inc., The: *See—*
Rakaska, Bertha R., 3,809,448.
Lee, William S. Moving system. 3,809,261, Cl. 214-38.0cc.
Lefever, Richard M., to Teledyne, Inc. Dispensing container for wire or the like. 3,809,333, Cl. 242-129.000.
Legendre, Jacques: *See—*
Baril, Michel; and Legendre, Jacques, 3,810,048.
Lehr, David. Safety stopper. 3,809,273, Cl. 215-9.000.
Leicht, Charles; and Reinertsen, Tormod K., to Ideal Toy Corporation. Balance game. 3,809,396, Cl. 273-1.00r.
Leipold, Forrest P.: *See—*
Balz, Gunther W.; and Leipold, Forrest P., 3,808,744.
Leister, Edwin S.; Kovach, George F.; and Robinson, William m., said Leister and said Kovach assors. to Duralac Chemical Corporation and said Robinson assor. to Cornell-Dubilier Electric Corporation. Ground bonded apparatus. 3,810,252, Cl. 317-12.00r.
Lemoigne, Pierre Marcel. Parachute. 3,809,342, Cl. 244-145.000.
Lenfesty, Gordon A.: *See—*
Green Peter L.; Lenfesty, Gordon A.; Talbot, Edmund H.; Joslin, Allen; and Kovacevic, Vukasin, 3,808,761.
Lenoir, Franz N., to Miller Printing Machinery Co. Sheet gripper apparatus for a cutting and creasing press. 3,809,390, Cl. 271-204.000.
Lenz, Gunther; Krimm, Heinrich; and Schnell, Hermann, to Bayer Aktiengesellschaft. High molecular weight linear aromatic polyesteramides. 3,809,679, Cl. 260-47.0cz.
Leonard, Ronald Keith: *See—*
Sutherland, Gail Russell; Leonard, Ronald Keith; and Hoeksema, Joe Henry, 3,808,783.
Leonheart, William H. All terrain vehicle. 3,809,004, Cl. 115-1.00r.
Lepelletier, Pierre Andre Georges, to Societe Anonyme Francaise du Ferodo. Hydrostatic unit with variable cylinder-capacity and transmission incorporating said unit. 3,808,811, Cl. 60-444.000.
Lermann, Peter; and Durr, Helmut, to Agfa-Gevaert Aktiengesellschaft. Photographic camera with automatic exposure control arrangement. 3,810,204, Cl. 354-29.000.
Lerner, Sidney L., to Ethyl Corporation. Method for reducing plasma lipid levels. 3,809,761, Cl. 424-330.000.
Lesniak, Chryzant; and Bryjak, Edmunt. Rotary vessel furnace. 3,809,377, Cl. 266-18.000.
Lettan, Richard H.; and McGuire, Robert J., to Eastman Kodak Company. Optical control mechanism. 3,809,460, Cl. 350-254.000.
Lever Brothers Company: *See—*
Muller, Johannes Jacobus; and Kock, Theodorus Joannes, 3,809,709.
Levin, Anatoly Yakovlevich: *See—*
Levin, Igor Anatolievich; Levin, Anatoly Yakovlevich; Fedorov, Nikolai Evstigneevich; Rogov, Iosif Alexandrovich; Afanasov, Erik Eduardovich; and Turyansky, Eduard Grigorievich, 3,809,341.
Levin, Igor Anatolievich; Levin, Anatoly Yakovlevich; Fedorov, Nikolai Evstigneevich; Rogov, Iosif Alexandrovich; Afanasov, Erik Eduardovich; and Turyansky, Eduard Grigorievich. Device for removing ice from surfaces of thin-walled structures. 3,809,341, Cl 244-134.00r.
Levine, Joel M.: *See—*
Kollar, Ernest P.; Levine, Joel M.; Tagawa, James M.; and Tiao, Hui-Li, 3,809,336.
Lewis, Clifford Jackson; and Bruski, Richard Scott, to Flintkote Company, The. Electric furnace steelmaking process using oxide of boron additive. 3,809,547, Cl. 75-11.000.
Lewis, Herbert O.: *See—*
Beaver, William D.; and Lewis, Herbert O., 3,808,752.
Lewis, Royce C., Jr. Closed wound suction apparatus having biased plate members. 3,809,087, Cl. 128-278.000.
Lewis, Royce C., Jr.; and Martin, Kelsey. Closed wound suction system. 3,809,498, Cl. 417-63.000.
Lewison, George Richard Grant: *See—*
Horsford, Anne; Lewison, George Richard Grant; and Paffett, James Arthur Haines, 3,809,000.
Lexitron Corporation: *See—*
Goldman, Arnold J.; Kurtin, Stephen L.; and Mead, Carver A., 3,810,107.
Leynaert, Jacky Robert: *See—*
Chatanier, Michel Jean; Leynaert, Jacky Robert; and Thiriot, Alain Roger, 3,808,888.
Libbey-Owens-Ford Company: *See—*
Boicey, James H.; Mattimoe, Paul T.; and Schmoeger, Otto J., Jr., 3,810,184.
Libby-Owens-Ford Company: *See—*
Kurick, James F., 3,809,234.
Liberti, Frank N., to General Electric Company. Thermally stable flame retardant polycarbonate composition comprising a polycarbonate and a stabilizer. 3,809,676, Cl. 260-45.75r.
Licci, Joseph R.: *See—*
Goldberg, Eugene J.; Kramer, Marvin W.; and Licci, Joseph R., 3,809,099.
Lichtblau, George Jay. Electronic security system. 3,810,147, Cl. 340-280.000.
Lieb, Solomon Nathan, 75% to Dworcan, Manfred. Alarm system for the safety of non-swimmers. 3,810,146, Cl. 340-279.000.
Liechty, Karl E., to Xerox Corporation. Pre-development exposure assembly. 3,809,472, Cl. 355-3.00r.
Liepa, Alexander L., to Procter & Gamble Company, The. Method of and apparatus for making substantially uniformly shaped flakes. 3,808,962, Cl. 99-323.400.
Lightolier Incorporated: *See—*
Woloski, Leonard E., 3,810,085.
Lilly Industries Ltd.: *See—*
Crank, George, 3,809,755.
Linda, Josef: *See—*
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Rosberg, Frantisek; Linda, Josef; Buzga, Ondrej; Dusek, Miloslav; and Cvetler, Jiri, 3,808,749.
Linde Aktiengesellschaft: *See—*
Reyhing, Jorg; and Rohde, Wilhelm, 3,808,773.
Linde, John P., to Reminton Arms Company, Inc. Firing mechanism for firearms. 3,808,724, Cl. 42-42.00r.
Linder, Ernst; Adalbert, Gerhard; and Hess, Juergen, to Bosch, Robert, GmbH. Valve arrangement for a compressor. 3,809,511, Cl. 418-259.000.
Lindner, Henry J., to Beatrice Foods Co., mesne. Bicycle wheel with rim and hub mounted reflector. 3,809,434, Cl. 301-37.00r.
Lindsten, George O., 30% to Lee, Raymond, Organization, Inc., The. Combination plier tool. 3,808,617, Cl. 7-6.200.
Linkskog, Bo Gosta, to Sandvik Aktiebolag. Adjustable cutting tool. 3,808,656, Cl. 29-106.000.
Linscheer, Wilem G.: *See—*
Fishman, William H.; and Linscheer, Wilem G., 3,809,752.
Liquid Gas Anlagen Union GmbH: *See—*
Kober, Drago, 3,809,153.
Liska, Manfred: *See—*
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Litsjo, Herbert E.: *See—*
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Litton Business Systems, Inc.: *See—*
Madison, Theodore, 3,809,205.
Litton, Garfield G. Measuring device. 3,808,892, Cl. 73-427.000.
Litton Systems, Inc.: *See—*
Reed, Joseph; and De Lorenzo, Joseph F., 3,809,815.
Reed, Joseph; Shapiro, Jonas M.; Iliakidis, Athanassious; and Apostolakis, Anthony, 3,809,816.
Liu, Hsing-Ching: *See—*
Liu, Hsing-Ching, 3,809,107.
Liu, Hsing-Ching, to Liu, Hsing-Ching and Chen, Wen-Sieh. Multifunctional umbrella cap. 3,809,107, Cl. 135-48.000.
Lloyd, Brian Edwin; and Marsh, Barry John, to GKN Group Services, Limited. Production of bodies from synthetic plastics materials. 3,809,518, Cl. 425-244.000.
Lock, Jonathan, Limited: *See—*
Helenurm, Kalju, 3,808,853.
Lockard, Joseph Larue; and Rose, William Henry, to AMP Incorporated. Sealed thumbwheel selector switch. 3,809,830, Cl. 200-11.0tw.
Locke, Edward V.; and Gerry, Edward T., to Avco Corporation. Method of operating closed-cycle carbon dioxide lasers in which carbon monoxide is used to prevent degradation of performance. 3,810,043, Cl. 331-94.500.
Locke, John P.: *See—*
Dieterich, Peter D.; Eiszner, William H., Jr.; and Locke, John P., 3,808,891.
Locke, Philip F. Electronic siren system. 3,810,169, Cl. 340-384.00e.
Loerop, Jack C. Ventilator and simulated structure panel. 3,809,141, Cl. 160-89.000.
Loersch, Johannes. Device for associating mounts for slide transparencies. 3,809,386, Cl. 270-58.000.

Loffler, Herbert. Protective cap of synthetic material for mouths of containers, particularly corked wine bottles. 3,809,365, Cl. 253-38.00r.

Logdon, Charles. Incinerator for refuse material. 3,808,986, Cl. 110-8.00r.

Lohman, Arthur F.: *See—*
Tierney, Peter R.; Lohman, Arthur F.; and Andrus, Donald M., 3,810,181.

Lohr, Raymond J.; and Auer, Robert T., to Marx, Louis, & Co., Inc., mesne. Tether-ball support assembly. 3,809,406, Cl. 273-95.00a.

Lokka, Jens Leif. Valve for introduction of additional air into internal combustion engines. 3,809,037, Cl. 123-119.0db.

Lone Star Container Corporation: *See—*
Keener, Arthur; Bradford, Larry David; Gary, Laverne E.; McLeon, John W.; and Carter, Billy W., 3,808,958.

Lone Star Gas Company: *See—*
Goldsberry, Fred L., 3,808,886.

Longshore, Donald W.: *See—*
Schott, Robert E.; and Longshore, Donald W., 3,808,810.

Look, Gunter: *See—*
Schulz, Horst; Schwerdhofer, Hans-Joachim; and Look, Gunter, 3,809,195.

Loomis, Russell M.: *See—*
Bertram, Leroy W.; Loomis, Russell M.; and Gaikowski, Michael D., 3,808,982.

Looney, John H., to Xerox Corporation. Snap roller. 3,808,658, Cl. 29-110.000.

Lopata, Karl Peter, to Fa. Kleinewefers Industrie Companie GmbH. Sealing arrangement for pressurized gas or vapour containers for material webs which are to be continuously treated. 3,808,845, Cl. 68-5.00e.

Lorenz, Dieter: *See—*
Olsen, Willi; and Lorenz, Dieter, 3,809,795.

Loveless, James C., to Deseret Pharmaceutical Company, Inc. Obturator. 3,809,081, Cl. 128-214.400.

Lovgren, Gosta Hjalmar Fredrik; and Lundell, Ove Vilmer, to Monark-Crescent AB. Motorcycle with protected exhaust pipe system. 3,809,174, Cl. 180-64.00a.

Lowd, George L.; and Lowd, Robert T. Platform support. 3,809,183, Cl. 182-186.000.

Lowd, Robert T.: *See—*
Lowd, George L.; and Lowd, Robert T., 3,809,183.

Lowe, Jack Brunner: *See—*
Gabby, John Lester; Barbin, Dennis Dale; and Lowe, Jack Brunner, 3,809,764.

Lowell Technological Institute Research Foundation: *See—*
Bibl, Klaus, 3,810,095.

Lowrance, Darrell J., to Lowrance Electronics, Inc. Automatic down rigger. 3,808,731, Cl. 43-4.000.

Lowrance Electronics, Inc.: *See—*
Lowrance, Darrell J., 3,808,731.

Loyzim, Robert James, to Superior Electric Company, The. Power supply for a stepping motor. 3,809,991, Cl. 318-696.000.

Lucas Aerospace Limited: *See—*
Glaze, Stanley George, 3,808,948.
Simmons, John Richard; and Westbury, Roy, 3,808,947.

Lucas, Joseph, (Industries) Limited: *See—*
Taylor, John Sassons, 3,808,800.

Lucas, Roy N., to Petrolite Corporation. Pollution-free gas turbine system. 3,808,795, Cl. 60-39.500.

Lucas, William P., to Robertshaw Controls Company. Temperature responsive device. 3,808,816, Cl. 60-530.000.

Luchaco, David G., to Bendix Corporation, The. Fuel cutoff circuit responsive to engine deceleration conditions for use in conjunction with the fuel delivery system for an internal combustion engine. 3,809,028, Cl. 123-32.0ea.

Ludena, Octaviano Roa. Steam cooker. 3,808,963, Cl. 99-417.000.

Ludwig, Melvin S., to Eagle Electric Mfg. Co., Inc. Terminal connector for electric extension cord. 3,810,070, Cl. 339-36.000.

Ludwig, Robert L. Attachment for chain saw. 3,808,684, Cl. 30-382.000.

Lundahl, Ezra C., Inc.: *See—*
Lundahl, Ezra Cordell, 3,809,269.

Lundahl, Ezra Cordell, to Lundahl, Ezra C., Inc. Side press hay wagon. 3,809,269, Cl. 214-519.000.

Lundell, Ove Vilmer: *See—*
Lovgren, Gosta Hjalmar Fredrik; and Lundell, Ove Vilmer, 3,809,174.

Lundell, Ralf O.: *See—*
Forss, Kaj G.; Gadd, George Otto; Lundell, Ralf O.; and Williamson, Harry W., 3,809,614.

Lutz, David Edward. Load-transfer device. 3,809,268, Cl. 214-512.000.

Luwa A.G.: *See—*
Bachmann, Robert Theophil, 3,808,701.

Lux, Benno: *See—*
Gillot, Jacques; and Lux, Benno, 3,809,635.

Lynam, John Thomas: *See—*
Aspinall, Arnold; Spruce, David Gordon; and Lynam, John Thomas, 3,810,000.

Lynch Communication Systems, Inc.: *See—*
Fortuna, Achille C.; and Persson, Hans-Uno, 3,810,020.

Lynott, John J.: *See—*
Dodd, Paul D.; Lynott, John J.; and Treder, John D., 3,809,263.

Lyon & Healy, Inc.: *See—*
Palma, Joseph; and Christiansen, Henning, 3,809,231.

Lythgoe, Stanley: *See—*
Gaskell, Philip Hedley; Lythgoe, Stanley; Irlam, Philip Sidney; Miller, Robert Percy; and Barry, Thomas Ian, 3,809,543.

Lythgoe, Stanley; and Irlam, Philip Sidney, to Pilkington Brothers Limited. Glass ceramic materials. 3,809,542, Cl. 65-33.000.

M & J Valve Company: *See—*
Grove, Marvin H.; and Dunegan, Ronald G., 3,809,113.

Mac Close, Joe: *See—*
Rogers, Frank J.; and Mac Close, Joe, 3,809,737.

Mac Kenzie, Robert Douglas; and Tilford, Charles Hormon, to Richardson-Merrell Inc. Antithromobotic agents. 3,809,753, Cl. 424-250.000.

Machek, John A., to Wagner Electric Corporation. Anti-skid mechanism. 3,809,125, Cl. 137-625.650.

Machida, Takayasu: *See—*
Nikaido, Akira; Onda, Mitsuo; Machida, Takayasu; Nakajima, Fumio; and Yanagawa, Yoshihiki, 3,808,792.

Macintyre, John S.: *See—*
Wiesler, Mordechai; and Macintyre, John S., 3,810,017.

Mack, Anthony M.: *See—*
Berman, Irwin; Henschel, Robert; Pai, David H.; Nash, Charles F.; Mack, Anthony M.; and Alfano, Bernardino M., 3,808,880.

Mackal, Glenn H. Inflation manifold. 3,809,288, Cl. 222-5.000.

MacKissic, Albert E.; and Kolb, Robert C., to Amerind MacKissic. Disintegration apparatus. 3,809,323, Cl. 291-101.700.

Macy, Robert W., II. Fluid transmission. 3,808,814, Cl. 60-487.000.

Madison, Theodore, to Litton Business Systems, Inc. Powered type action with a cam arrestor. 3,809,205, Cl. 197-16.000.

Magee, Edward F.: *See—*
Membrino, Robert J.; and Magee, Edward F., 3,808,711.

Magill, John Willett. Self-contained mobile passenger bridge for airplane loading and unloading operations. 3,808,626, Cl. 14-71.000.

Maginnis, Christopher L.: *See—*
Zieve, Robert M.; Maginnis, Christopher L.; and Kleidermacher, Moishe, 3,810,119.

Magnavox Company, The: *See—*
Allison, Gordon H., Jr.; and Greaf, Clarence V., 3,809,395.

Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., to United States of America, Agriculture. N-Substituted fatty acid amide lubricants. 3,809,706, Cl. 260-403.000.

Magnetic Analysis Corporation: *See—*
Mansson, Sven E., 3,809,998.
Suhr, Peter J.; Spierer, Edward D.; and Mhatre, Girish P., 3,809,987.

Magnotta, Frank; Ketley, Arthur D.; and Kehr, Clifton L., to Grace, W. R., & Co. Chain extended polythioether polyene photocurable compositions. 3,809,633, Cl. 204-159.140.

Magol, Byram J.: *See—*
Pratt, Harry M.; Magol, Byram J.; and Money, Dudley P., 3,809,018.

Magyor Tudomanyos Akademia: *See—*
Csuros, Zoltan; and Petro, Jozsef, 3,809,658.

Mahle, Christoph E.: *See—*
Wachs, Marvin Richard; Berman, Arnold L.; and Mahle, Christoph E., 3,810,255.

Maida, Osamu, to Nippon Kagaku K.K. Exposure determining device. 3,809,981, Cl. 318-294.000.

Maier, Alfred E.: *See—*
Walker, Eugene J.; and Maier, Alfred E., 3,810,051.

Maki, Eino J., to Sterling Drug Inc. Safety bottle closure. 3,809,272, Cl. 215-9.000.

Makihara, Hiroshi: *See—*
Yasuda, Michio; Makihara, Hiroshi; and Kadota, Shozo, 3,810,093.

Mal, M. Kumar; and Tarkan, Stuart E., to Chromalloy American Corporation. Sintered steel bonded titanium carbide tool steel characterized by an improved combination of transverse rupture strength and resistance to thermal shock. 3,809,540, Cl. 29-182.800.

Malcosky, Norman D., to Columbia Gas System Service Corporation. Hermetically sealed pump. 3,809,506, Cl. 417-439.000.

Mall, Gunther, to Pfaff Industriemaschinen GmbH. Device for feeding the cloth in a sewing system for the production of open darts. 3,808,992, Cl. 112-121.150.

Mallory, P. R., & Co. Inc.: *See—*
Erwin, Robert Dale, 3,809,932.
Klein, Gerhart P., 3,809,552.
Krock, Richard H.; and Richmond, William J., 3,808,671.

Malone, Harold L.; and Bodensteiner, Robert J., to Eastmen Kodak Company. Flash extender. 3,810,214, Cl. 354-148.000.

Malyon, Brian R., to Selectro-Micro Company Limited. Information retrieval apparatus. 3,809,302, Cl. 226-33.000.

Mamiya Koki Kabushiki Kaisha: *See—*
Negishi, Masataka, 3,809,992.

Manarch Marking Systems Company, The: *See—*
Dobras, Bruce W., 3,809,893.

Manca, Michael E.; and Drinnon, Robert H., to Boeing Company, The. Clamshell exhaust nozzle and sound deflector. 3,809,178, Cl. 181-33.0hc.

Manchester, Russell C.: *See—*
Chough, Euiwon; Deverse, Frank T.; Konrad, Franz; Kurtz, John A.; and Manchester, Russell C., 3,809,050.

Mann, Douglas M. Dental model trimmer. 3,808,750, Cl. 51-273.000.

Mansky, Michael H.: *See—*

Howland, Robert F.; Mansky, Michael H.; and Richards, Willie J., 3,809,781.

Mansson, Sven E., to Magnetic Analysis Corporation. Current regulator for pulse eddy current tester. 3,809,998, Cl. 323-4.000.

Mantey, John P., to International Business Machines Corporation. Web movement control in a reel-to reel web transport. 3,809,335, Cl. 242-186.000.

Manton, John C.: *See—*
Nibby, Chester M.; Manton, John C.; and Curley, John L., 3,809,884.

Manucso, Jon R.: *See—*
Anderson, Norman J.; Decker, John L.; and Manucso, Jon R., 3,808,837.

Manz, August Frederick, to Union Carbide Corporation. Method for short circuit metal transfer arc welding. 3,809,853, Cl. 219-137.000.

Maran, Armand C. Rotary abrasive tool and coated abrasive disc and backing assembly therefor. 3,808,753, Cl. 51-358.000.

Marathon Rollers, Incorporated: *See—*
Menges, Louis J.; and Wolff, Robert H., 3,808,657.

Marbach, Walter V.; Acton, Frank J.; Eichin, Harry P.; and Winokur, Louis L., to Union Carbide Corporation. Method and apparatus for moisturizing shirred casing sticks. 3,809,576, Cl. 134-42.000.

Marcinko, Frank V.: *See—*
Tarne ja, Krishan S.; and Marcinko, Frank V., 3,809,582.

Marcovitch, Jacob. Forming of articles by rolling. 3,808,863, Cl. 72-199.000.

Marder, Herman L.: *See—*
Elkind, Vincent T.; Hunter, Robert T.; Marder, Herman L.; and Hutchinson, Homer F., 3,809,663.

Markley, Theodore J., to Allen-Bradley Company. Programmable magnetics for a numerical control system. 3,810,104, Cl. 340-172.500.

Marley, Brian George, to Reserach Laboratories of Australia Pty. Limited. Method for electrophotographic exposure. 3,809,555, Cl. 96-1.00r.

Marrie, Paul, to S.A.R.L. Etud. Food-comminution device. 3,809,325, Cl. 241-278.00r.

Marsh, Barry John: *See—*
Lloyd, Brian Edwin; and Marsh, Barry John, 3,809,518.

Marshall, Clarence G.: *See—*
Hungerford, Laurence D.; and Marshall, Clarence G., 3,810,100.

Martens, Ernst: *See—*
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Martin, Johann. Device in particular for drawing sheet-metal. 3,808,872, Cl. 72-453.000.

Martin, Kelsey: *See—*
Lewis, Royce C., Jr.; and Martin, Kelsey, 3,809,498.

Martin, Louis E., to Societe Anonyme Poclain. Hydraulic motors. 3,808,951, Cl. 91-492.000.

Martin, Tellis Alexander; and Comer, William Timmey, to Mead Johnson & Company. 1,4-Bis-acylipiperazines. 3,809,697, Cl. 260-268.000.

Martin, William S.; and White, Donald R., to General Electric Company. Multi-color face-pumped liquid laser device. 3,810,040, Cl. 331-94.500.

Martin, William S., to General Electric Company. Face-pumped liquid laser device. 3,810,041, Cl. 331-94.500.

Martini, Leo J., to Master Fence Fittings, Inc. Tension band. 3,809,371, Cl. 256-47.000.

Maruyama, Koichi: *See—*
Yamazaki, Eiichi; Maruyama, Koichi; Ueda, Toshio; and Nakamura, Tomizo, 3,809,558.

Maruyama Mfg. Co., Ltd.: *See—*
Uchiyama, Ryoji, 3,809,508.

Marx, Louis, & Co., Inc., mesne: *See—*
Lohr, Raymond J.; and Auer, Robert T., 3,809,406.

Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
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Maschinenfabrik Rieter AG: *See—*
Wust, Olivier, 3,809,326.

Maschinenfabrik Wifag: *See—*
Brunner, Heinrich, 3,809,303.

Mason, Paul B., to Polaroid Corporation. Motion picture system. 3,809,465, Cl. 352-78.00r.

Masoneilan International, Inc.: *See—*
Baumann, Hans D., 3,809,362.

Massachusetts Institute of Technology: *See—*
Javan, Ali; and Feld, Michael S., 3,809,887.

Master Fence Fittings, Inc.: *See—*
Martini, Leo J., 3,809,371.

Master Packaging Equipment, Inc.: *See—*
Reid, Laurie M., 3,808,767.

Matej, Ronald J., to Prutton Corporation. End working machine tool. 3,808,623, Cl. 10-21.000.

Mathauser, William R. Quick connect electrical coupler. 3,810,258, Cl. 339-12.00r.

Mathias, Donald L. Book holder and shield. 3,809,352, Cl. 248-451.000.

Mathias, James J.; and Holland, Robert L., to American Potato Company. Process for producing clusters of dehydrated potato agglomerates. 3,809,758, Cl. 426-285.000.

Matles, Arthur L. Bone splint. 3,809,075, Cl. 128-92.00a.

Matsumoto, Akio; and Someno, Kenji, to Mitsui Mining & Smelting Co., Ltd. Fishing net having a large specific gravity. 3,808,725, Cl. 43-7.000.

Matsumoto, Toshiaki, to Minolta Camera Kabushiki Kaisha. Switch operating device for photographic cameras. 3,810,217, Cl. 354-204.000.

Matsuo, Shunji; Sato, Shui; Endo, Takaya; Kasai, Keiji; and Inoue, Izaburo, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide color photographic emulsion. 3,808,945, Cl. 96-100.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Higashiyama, Kenji; and Hirata, Hiroshi, 3,809,636.
Higashiyama, Kenji; and Hirata, Hiroshi, 3,809,637.
Higashiyama, Kenji; and Hirata, Hiroshi, 3,809,638.
Ikeda, Hisao, 3,810,242.
Kozu, Isao; Kurihara, Hidetoshi; and Hino, Tetsuo, 3,810,239.
Kubo, Shoichi; and Komatsu, Masakazu, 3,808,678.
Okubo, Tsuneo; Nakamura, Shoichi; and Mori, Eizo, 3,809,918.
Okuno, Noboru; Kamogawa, Toshiro; and Okino, Yoshihiro, 3,809,804.

Matsushita Electric Works, Ltd.: *See—*
Yoshioka, Hideoki, 3,809,837.

Matsushita, Tomiharu: *See—*
Yamaguchi, Yoshihiro; Matsushita, Tomiharu; Noguchi, Masataka; Nakagawa, Junichi; and Hasegawa, Hakumi, 3,808,860.

Matsuzawa, Hideo; and Tokutomi, Takashi, to Mitsubishi Rayon Co., Ltd. Recovering methacrylic acid and methanol. 3,809,645, Cl. 210-21.000.

Mattel, Inc.: *See—*
Gay, Derek J.; Smedley, William H.; Cohen, Aaron G.; Dworkin, Darryl R.; Nuttall, Michael W.; and Wilson, Nicol S., 3,808,732.
Shapero, Wallace H.; and Cane, Albert, 3,809,661.

Matthews, Vincent: *See—*
Costain, Winston; and Matthews, Vincent, 3,809,670.

Mattimoe, Paul T.: *See—*
Boicey, James H.; Mattimoe, Paul T.; and Schmoeger, Otto J., Jr., 3,810,184.

Mattsson, Ove Henning; and Bertilsson, Britt-Marie Elisabeth, to KemaNord AB. Crotonamide derivatives suitable as agents for control of plant diseases. 3,809,718, Cl. 260-562.00s.

Mayers, Gerald K., to Container Bins, Inc. Method of loading cargo containers. 3,809,264, Cl. 214-302.000.

Maynard, Kenneth B.: *See—*
Johnson, Oliver D.; and Maynard, Kenneth B., 3,809,410.

Mazzei, Alessandro: *See—*
Roggero, Arnaldo; Mazzei, Alessandro; and Proni, Antonio, 3,809,684.

McBroom, Robert C., to General Electric Company. Image intensifier compensated for earth's magnetic field. 3,809,889, Cl. 250-213.0vt.

McCabe, Thomas C. Device for delimbing trees. 3,809,134, Cl. 144-2.00z.

McCall, Frank S.: *See—*
Burke, William R.; McCall, Frank S.; Clark, Kenneth G.; De Pass, Ernest T.; and Friend, William H., 3,809,593.

McCarthy, Lawernce James: *See—*
Parks, William Louis; Grenoble, William Luster, Jr.; Harjes, Henry Herman, Jr.; and McCarthy, Lawernce James, 3,810,102.

McCaskill, John Walton: *See—*
Bonds, James Vaull; and McCaskill, John Walton, 3,809,158.

McCord Corporation: *See—*
Weller, Peter A., 3,809,420.

McCormick, Harold E.: *See—*
Prasse, Herbert F.; and McCormick, Harold E., 3,809,546.

McCully, Everette R.: *See—*
Cope, James R.; and McCully, Everette R., 3,809,328.

McD Hess, Alexander. Projecting device hitting means. 3,809,047, Cl. 124-1.000.

McDonald, William G.: *See—*
Dunning, Walter B.; Endter, Dale S.; and McDonald, William G., 3,810,229.

McGinnis, Bernard W.; and Orlando, Anthony W., to International Business Machines Corporation. Selectively tensioned transducer assembly for operation in compliant relation to individual memory discs of a partitionable aggregate of rotating flexible discs. 3,810,243, Cl. 360-98.000.

McGlashan, Kenneth W., to Pemcor, Inc. Deflection yoke having relatively adjustable core and coils. 3,810,053, Cl. 335-212.000.

McGowan, Eric, to United GAs Industries Limited. Gas/electric control mechanism. 3,810,249, Cl. 219-279.000.

McGraw, Ron J.: *See—*
Dobson, Richard D., Sr.; and Clifton, Clyde J., 3,809,505.

McGregor, Roger. Accessory to fire extinguisher. 3,810,250, Cl. 240-6.40r.

McGuire, Robert J.: *See—*
Lettan, Richard H.; and McGuire, Robert J., 3,809,460.

McKay, Robert S.: *See—*
Terzian, Rouben T.; Glass, Marvin I.; and McKay, Robert S., 3,808,736.

McLane, Jack E., to Wirtz Manufacturing Company, Inc. Aligning mechanism for battery grid casting machine. 3,808,663, Cl. 29-204.000.

McLaren, Vincent H., Jr.; and Panchal, Navnit, to Imperial Knife Associated Companies, Inc. Electric can opener. 3,808,917, Cl. 82-47.000.

McLaughlin, Donald W., to GTE Automatic Electric Laboratories, Incorporated. Local control panel for data recorder. 3,809,814, Cl. 179-8.00a.

McLaughlin, Ernest O.: *See*—
Aronoff, Elihu J.; and McLaughlin, Ernest O., 3,809,569.

McLeod, Duncan T. Ski propelling device. 3,809,173, Cl. 180-5.00r.

McLeon, John W.: *See*—
Keener, Arthur; Bradford, Larry David; Gary, Laverne E.; McLeon, John W.; and Carter, Billy W., 3,808,958.

McMorris, Arthur H.: *See*—
Schweppe, Joseph L.; McMorris, Arthur H.; and Ahlgren, Erick L., 3,809,120.

McMunn, Charles William, III; and Nakayama, Takashi, to Du Pont de Nemours, E. I., and Company. Seal ring compositions electronic packages made therewith. 3,809,797, Cl. 174-52.00s.

McNeil Corporation: *See*—
Pamer, Karl A., 3,809,382.

McVey, Charles I.: *See*—
Collins, Byron R.; and McVey, Charles I., 3,809,943.

McWilliams, Larry L., to S&M Enterprises Inc. Shredder adaptor. 3,808,782, Cl. 56-16.900.

Meacham, James H., to Westinghouse Electric Corporation. Method and circuit for monitoring and detecting sweep signal failure. 3,810,024, Cl. 328-8.000.

Mead, Carver A.: *See*—
Goldman, Arnold J.; Kurtin, Stephen L.; and Mead, Carver A., 3,810,107.

Mead Johnson & Company: *See*—
Martin, Tellis Alexander; and Comer, William Timmey, 3,809,697.

Means, Graham Neville: *See*—
Chick, Orest Nicholas; and Means, Graham Neville, 3,809,666.

Mechanical Technology Incorporated: *See*—
Cherubim, Justin Lawrence, 3,809,443.

Med General Inc.: *See*—
Ersek, Robert A.; Wall, Donald E.; and Garity, Michael C., 3,809,072.

Medal, Richard J.: *See*—
Dahlquist, James E.; and Medal, Richard J., 3,809,824.

Medial de Toledo & Cie: *See*—
Bertrand, Francois Robert, 3,809,754.

Mee, John D.: *See*—
Carpenter, James W.; Mee, John D.; and Heseltine, Donald W., 3,809,691.

Mefina S.A.: *See*—
Aeschlimann, Pierre; Fresard, Marcel; and Jimenez, Antonio, 3,809,851.

Megna, Salvatore J. Wig. 3,809,100, Cl. 132-53.000.

Meisenheimer, Raymond L. Load balancing voltage regulator. 3,809,996, Cl. 322-28.000.

Melcer, Irving: *See*—
Sair, Louis; and Melcer, Irving, 3,809,767.

Mele, John J.: *See*—
Chang, Gregory I.; Buhrke, Rolfe E.; Rice, Verner K.; and Mele, John J., 3,810,121.

Mellenger, James A.: *See*—
Gill, Walter J.; and Mellenger, James A., 3,809,817.

Melvin, William J., to Collins Radio Company. Three-channel data modem apparatus. 3,809,821, Cl. 179-15.00r.

Membrino, Robert J.; and Magee, Edward F., to Singer Company, The. Collision avoidance radar simulator system. 3,808,711, Cl. 35-10.400.

Memorex Corporation: *See*—
Monett, Michael Ross, 3,810,234.

Menasco Manufacturing Company: *See*—
Bhutani, Harish K.; Oda, Albert Y.; and Hughes, Ronald A., 3,808,942.

Mendicino, Frank Dominic: *See*—
Boersma, Robert Paul; Mendicino, Frank Dominic; and Omietanski, George Michael, 3,809,713.

Menges, Louis J.; and Wolff, Robert H., to Marathon Rollers, Incorporated. Hickey roll and method of making same. 3,808,657, Cl. 29-120.000.

Menley & James Laboratories, Ltd.: *See*—
Calabrese, Anthony J.; Stettler, Wayne J.; and Zwiren, Jan Marie, 3,809,785.

Mercer, Austin Cartwright, Jr., to Mercer Pneumatic Tools Limited. Bar feed mechanism. 3,809,253, Cl. 214-1.00s.

Mercer Pneumatic Tools Limited: *See*—
Mercer, Austin Cartwright, Jr., 3,809,253.

Merck & Co., Inc.: *See*—
Schultz, Everett M.; and Cragoe, Edward J., Jr., 3,809,721.

Mercurio, Leonard. Pilfer-resistant lock construction, having segmented cylinder. 3,808,854, Cl. 70-419.000.

Merrick, James W., to Del Norte Technology, Inc. Radar trilateralization position locators. 3,810,179, Cl. 343-6.51c.

Merrick, Woodrow W.: *See*—
Norris, Clarence G.; and Merrick, Woodrow W., 3,808,764.

Merrill, Stewart H.; and Olson, James R., to Eastman Kodak Company. Dry electrostatic toner composition and process of developing. 3,809,554, Cl. 96-1.0sd.

Merry Companies Incorporated: *See*—
Nichols, Charles E., Jr.; and Howard, Gerald T., 3,809,595.

Messer Griesheim GmbH: *See*—
Roeder, George; and Schmidt, Claus, 3,809,308.

Messerschmitt-Bolkow-Blohm GmbH: *See*—
Helmcke, Conrad; Hermann, Walter; and Kraus, Peter, 3,809,803.

Messner, Georg; and De Nora, Vittorio, to De Nora, Oronzio, Impianti Elettrochimici S.p.A. Process and apparatus for the production of alkali metal chlorates. 3,809,629, Cl. 204-95.000.

Mestroni, Giovanni: *See*—
Costa, Giacomo; and Mestroni, Giovanni, 3,809,632.

Metalife Company, The: *See*—
Chappell, Albert R., 3,809,293.

Metallurgical Exoproducts Corporation: *See*—
Rocher, George, 3,809,355.
Rocher, George; and Vayda, Pierre Andre, 3,809,380.

Metcalfe, Kenneth A.; and Smith, Ian E., to Commonwealth of Australia, The, % Secretary Department of Supply, The. Bitting card for data recording. 3,810,193, Cl. 346-76.0es.

Metzinger, Leonard L., to Bunker Ramo Corporation. Worm drive for electrically wound clock. 3,808,905, Cl. 74-425.000.

Meurer, Siegfried; Emmerling, Wolfram; and D'Alfonso, Nunzio, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Air compressing self-igniting fuel injection internal combustion engine. 3,809,031, Cl. 123-32.00r.

Meyer, Charles F.: *See*—
Groth, Clarence N.; Hempel, James N.; Wieczorek, Robert A.; Meyer, Charles F.; and Cook, Robert G., 3,809,965.

Meyer, Charles F.; and Retzer, Kenneth W., to Square D Company. Direct current electromagnetic switch. 3,809,958, Cl. 317-11.00e.

Meyer Labs, Inc.: *See*—
Hoyt, Harold C., Jr., 3,810,084.

Mhatre, Girish P.: *See*—
Suhr, Peter J.; Spierer, Edward D.; and Mhatre, Girish P., 3,809,987.

Michaelson, Stanley D.; and Broadbent, Carl D., to Kennecott Copper Corporation. Slope cave leaching of exposed or near-surface mineralized deposits. 3,809,430, Cl. 299-5.000.

Michigan Instrument, Inc.: *See*—
Mosley, Kenneth C.; and Barkalow, Clare E., 3,808,706.

Microdot Inc.: *See*—
Moore, Marvin W., 3,810,072.

Microform Data Systems, Inc.: *See*—
Moritz, Jules G., 3,809,468.

Mihalik, Nandor. Electrostatographic copying apparatus. 3,809,474, Cl. 355-11.000.

Miksitz, Frank J., to Universal Feeders, Inc. Gravity discharge apparatus. 3,809,286, Cl. 222-1.000.

Millard, William E.: *See*—
Blezard, Robert C.; and Millard, William E., 3,808,840.

Miller, Charles Eveleigh, to International Telephone and Telegraph Corporation. Densitometer and probe therefor. 3,808,875, Cl. 73-32.000.

Miller, Chauncey S., to Sperry Rand Corporation. Multifrequency communication system for fading channels. 3,810,019, Cl. 325-40.000.

Miller, Gerald K.; and Rautiola, Norman A., to Nartron Corporation. Directional signal with cam switch actuators. 3,809,833, Cl. 200-61.270.

Miller, Gerlad K.; and Rautiola, Norman A., to Nartron Corporation. Audio-visual signal device. 3,810,149, Cl. 340-326.000.

Miller, Gordon H., to Texaco Inc. Process for the trimerization of nitriles. 3,809,693, Cl. 260-248.0cs.

Miller, Maurice E. Hydraulically operated weight control. 3,809,165, Cl. 172-328.000.

Miller Printing Machinery Co.: *See*—
Lenoir, Franz N., 3,809,390.

Miller, Robert Percy: *See*—
Gaskell, Philip Hedley; Lythgoe, Stanley; Irlam, Philip Sidney; Miller, Robert Percy; and Barry, Thomas Ian, 3,809,543.

Miller, Roger E.: *See*—
Arnold, William A.; and Miller, Roger E., 3,810,163.

Millet, William G. Method of making dental restorations and pontic member therefor. 3,808,687, Cl. 32-2.000.

Millett, James A., to Bank of Montreal, mesne. Camera mechanism. 3,810,218, Cl. 354-203.000.

Milonas, Janet O.: *See*—
Milonas, Timothy S.; and Milonas, Janet O., 3,809,740.

Milonas, Timothy S.; and Milonas, Janet O. Flower candle molding process. 3,809,740, Cl. 264-306.000.

Minnesota Mining and Manufacturing Company: *See*—
Hansen, Paul E., 3,809,077.
Peterson, Arthur H.; and Britz, Galen C., 3,809,442.
Sanders, James F., 3,809,854.
Stivers, David A., 3,809,672.
Yarian, Dean R., 3,809,668.

Minolta Camera Kabushiki Kaisha: *See*—
Imura, Toshinori, 3,810,205.
Matsumoto, Toshiaki, 3,810,217.
Nanba, Yasuhiro; and Sahara, Masayoshi, 3,810,208.
Tanaka, Harumi, 3,810,227.
Ueda, Hiroshi, 3,810,216.

Minor, Paul S., to Parkson Corporation. Controlled reaction systems. 3,809,708, Cl. 260-409.000.

Minster Machine Company, The: *See*—
Voorhees, John E.; and Schockman, Robert L., 3,808,912.

Miram, George V.; and Mizuhara, Yosuke M., to Varian Associates. Gridded electron tube employing cooled ceramic insulator for mounting control grid. 3,809,939, Cl. 313-39.000.

Miram, George V.; and Woolsey, Samuel W., to Varian Associates. Method for preserving electron gun assemblies. 3,809,957, Cl. 313-7.000.

Miramontes C., Luis E. Process for the conversion of exhaust gases of the internal combustion engines into harmless products. 3,808,805, Cl. 60-274.000.

Misener, Donald C.: *See—*
Faurschou, Donald K.; Misener, Donald C.; Pope, James C.; and Hadden, Richard, 3,809,639.

Miskin, Richard B., to Miskin Scraper Works, Inc. Bale loader. 3,809,256, Cl. 214-6.00b.

Miskin Scraper Works, Inc.: *See—*
Miskin, Richard B., 3,809,256.

Missenda, Andrew Michael: *See—*
Crowley, Lee Francis; Presky, Dennis Robert; and Missenda, Andrew Michael, 3,810,023.

Mitchell, Robert S., to Monsanto Company. Methods of scale inhibition. 3,809,654, Cl. 252-180.000.

Mitchner, Joseph L.; Keller, Robert A.; and Graham, Clyde B., to National Cash Register Company. Method for assembling a print head. 3,808,669, Cl. 29-466.000.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
Nakamura, Hirokazu; and Ito, Tadahiko, 3,808,806.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Shibata, Katsuhiko; Seika, Yajuro; Sakamoto, Iwao; Yamada, Kango; and Kondo, Setsuo, 3,808,631.

Mitsubishi Petrochemical Co., Ltd.: *See—*
Okawa, Sohei; and Doi, Shuhei, 3,809,671.

Mitsubishi Rayon Co., Ltd.: *See—*
Matsuzawa, Hideo; and Tokutomi, Takashi, 3,809,645.

Mitsui Mining & Smelting Co., Ltd.: *See—*
Matsumoto, Akio; and Someno, Kenji, 3,808,725.

Mitsui Mining Company, Limited: *See—*
Yamamoto, Masami, 3,809,318.

Miwa, Haruo: *See—*
Takagi, Katsuyuki; and Miwa, Haruo, 3,809,927.

Miyamatsu, Tsugio: *See—*
Kimura, Hiroshiro; Arimoto, Heiji; Nara, Hirohisa; Miyamatsu, Tsugio; and Kitajima, Mitsuo, 3,809,131.

Miyanishi, Noritake; Kubota, Shigeru; Baba, Hirotoshi; and Takahashi, Masahiro, to Kobe Steel Ltd. Modulating valve for vehicle transmission systems. 3,809,201, Cl. 192-109.00f.

Miyata, Akira; Okubo, Hideyo; Tomita, Chikayoshi; and Suzuki, Akio, to Nippon Kokan Kabushiki Kaisha. Electroplating apparatus with plating vessel having protrusions and recesses. 3,809,641, Cl. 204-213.000.

Miyata, Hiromasa: *See—*
Kobayashi, Torao; and Miyata, Hiromasa, 3,809,185.

Mizell, Louis Richard: *See—*
Kerstetter, Virginia Ann; and Mizell, Louis Richard, 3,809,589.

Mizuhara, Yosuke M.: *See—*
Miram, George V.; and Mizuhara, Yosuke M., 3,809,939.

Mobil Oil Corporation: *See—*
Baudouin, Pascal, 3,809,647.
Brennan, James A., 3,809,652.
Sayles, Francis S., 3,809,650.

Mobile Oil Corporation: *See—*
Andress, Harry J., Jr., 3,809,719.

Mochida, Yasunori, to Nippon Gakki Seizo Kabushiki Kaisha. Tone generator system. 3,809,787, Cl. 84-1.010.

Mod, Robert R.: *See—*
Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., 3,809,706.

Moebs, Heinz: *See—*
Kunert, Heinz; Moebs, Heinz; and Sauer, Gerd, 3,810,180.

Moffatt, John: *See—*
Damodaran, Nandyelath; Moffatt, John; Jones, Gordon; and Howarth, George, 3,809,689.

Mohrhauser, John P.; and Strazza, Richard W. Push button combination lock. 3,808,852, Cl. 70-285.000.

Moiroux, Auguste. Internal combustion engines. 3,809,030, Cl. 123-32.00k.

Moller, J. D., Optische Werke GmbH, Firma: *See—*
Brambring, Dieter Ferdinand, 3,809,454.

Molloy, Martin: *See—*
Vignini, Walter R.; and Molloy, Martin, 3,809,829.

Molnar, Jozsef: *See—*
Giflo, Henrik; Enekes, Sandor; Zambo, Pal; Sziklavari, Janos; Farkas, Istvan; Ivan, Geza; Molnar, Jozsef; and Vamosi, Jozsef, 3,809,550.

Moltzak, George C. Boat with bow outdrive and vertically swingable bow plane. 3,808,998, Cl. 114-66.50r.

Monark-Crescent AB: *See—*
Lovgren, Gosta Hjalmar Fredrik; and Lundell, Ove Vilmer, 3,809,174.

Monett, Michael Ross, to Memorex Corporation. Data recovery circuit. 3,810,234, Cl. 360-51.000.

Money, Dudley P.: *See—*
Pratt, Harry M.; Magol, Byram J.; and Money, Dudley P., 3,809,018.

Monia, Victor, to Guardian Packaging Corporation. Saran adhered to butadiene-styrene polymers. 3,809,602, Cl. 161-165.000.

Monsanto Company: *See—*
Bottini, Michael Lucien, 3,808,673.
Coaker, Antony W. M.; and Cowell, Elmer E., 3,809,667.
Gidge, Lester, 3,809,596.
Mitchell, Robert S., 3,809,654.
Phillips, Wendell Gary, 3,809,702.
Unland, Mark L.; and Barker, George E., 3,809,743.

Montacie, Marcel, to Union Industrielle Blanzy-Ouest. Rotary tool head for a continuous boring machine. 3,809,432, Cl. 299-85.000.

Montagna, Angelo A.: *See—*
Chun, Sun W.; Hamilton, Harry A.; and Montagna, Angelo A., 3,809,643.

Moore, Lewis Frank; and Price, George McNair, to Frymaster Corporation, The. Cooking system. 3,809,062, Cl. 126-369.000.

Moore, Marvin W., to Microdot Inc. Socket. 3,810,072, Cl. 339-88.00r.

Moore, Samuel, & Company: *See—*
Smith, Roy B.; Sabo, Alex T.; and Kavick, Edward M., 3,809,184.

Moran, Thomas M.; and Paskert, Joseph H., to Eaton Corporation. Self retaining knob. 3,808,635, Cl. 16-121.000.

Moraw, Roland; and Schadlich, Gunther, to Kalle Aktiengesellschaft. Method of reproducing a relief image. 3,809,473, Cl. 355-9.000.

Mordini, Claudio: *See—*
Pozzetti, Mario; and Mordini, Claudio, 3,809,874.

Morgan, Edward J., to Brunswick Corporation. Internal combustion engine. 3,809,027, Cl. 123-30.00r.

Morgardshammar Aktiebolag: *See—*
Bennet, Tom Joachim, 3,808,864.

Mori, Chiharu; Ota, Katsumi; and Togawa, Hideaki. Electrical controls for camera shutters. 3,810,203, Cl. 354-24.000.

Mori, Eizo: *See—*
Okubo, Tsuneo; Nakamura, Shoichi; and Mori, Eizo, 3,809,918.

Mori, Hideki: *See—*
Akai, Shin-Ichi; Mori, Hideki; Takahashi, Nobuo; and Iguchi, Shin-Ichi, 3,809,584.

Mori, Kenichi; and Takebe, Hisao, to Tokyo Shibaura Electric Co. Ltd. Character type discriminator for character readers. 3,810,094, Cl. 340-146.30d.

Mori, Masanori, to Aisin Seiki Kabushiki Kaisha. Clutch disc with coil and rubber springs. 3,809,198, Cl. 192-106.200.

Moribe, Kamataro, to Nagata, D., Co., Ltd. One way positive clutch with one way friction brake. 3,809,196, Cl. 192-12.00b.

Morisaki, Nobukazu, to Daido Metal Company Ltd. Aluminum and tin base bearing alloy. 3,809,551, Cl. 75-140.000.

Moritz, Jules G., to Microform Data Systems, Inc. Film strip reader. 3,809,468, Cl. 353-26.000.

Moriya, Hisanori: *See—*
Hosho, Yukio; Moriya, Hisanori; and Oyama, Yoshishige, 3,809,042.

Morris, Floyd D.; and Rich, Barry S., to Ultronic Systems Corporation. Storage and space availability apparatus for a data processing printout system. 3,810,109, Cl. 340-172.500.

Morris, George O., 1/2 to Offenhauser, Fred C. Internal combustion engine manifold. 3,809,032, Cl. 123-52.00m.

Morris, James C. Friction keepers for wheels and structures utilizing them. 3,809,435, Cl. 301-112.000.

Morris, Louis, Jr.: *See—*
White, Dale; and Morris, Louis, Jr., 3,810,058.

Morrison, Howard J., to Glass, Marvin, & Associates. Movable figure toy. 3,808,735, Cl. 46-135.00r.

Mortensen, Don. Shower curtain guard device. 3,808,610, Cl. 4-149.000.

Moser, Andreas, to International Business Machines Corporation. Semiconductor switching and storage device. 3,810,128, Cl. 340-173.00r.

Mosley, Kenneth C.; and Barkalow, Clare E., to Michigan Instrument, Inc. Pneumatic lung analog. 3,808,706, Cl. 35-17.000.

Moss, James H., Jr.: *See—*
Allison, Birt, Jr.; Daniels, Calvin L.; and Moss, James H., Jr., 3,809,687.

Motoda Electronics Co., Inc.: *See—*
Motoda, Kenro; and Hasegawa, Kensuke, 3,809,988.

Motoda Electronics Co., Ltd.: *See—*
Motoda, Kenro; and Hasegawa, Kensuke, 3,810,008.

Motoda, Kenro; and Hasegawa, Kensuke, to Motoda Electronics Co., Inc. Automatic load weight balancing system. 3,809,988, Cl. 318-646.000.

Motoda, Kenro; and Hasegawa, Kensuke, to Motoda Electronics Co., Ltd. Apparatuses for detecting failure in a potentiometer circuit. 3,810,008, Cl. 324-62.000.

Motoren-Werke Mannheim AG, vorm. Benz ABT Stationarer Motorenbau: *See—*
Friedemann, Andreas Zacharias, 3,808,815.

Motorola, Inc.: *See—*
Nation, Melvin S., 3,808,642.

Mozes, Alexander. Detector device for detecting unintentional urination. 3,809,078, Cl. 128-138.00a.

Mueller, Arthur C., to Bell & Howell Company. Exposure control system. 3,810,207, Cl. 354-42.000.

Mueller Co.: *See—*
Rhodes, Robert L., 3,809,363.

Mueller, John W.; and Pearson, William M. Underground valve having below-surface parts removable from above-surface position. 3,809,114, Cl. 137-315.000.

Mueller-Tamm, Heinz; Urban, Friedrich; Frielingsdorf, Hans; Nickl, Johann; Schweier, Guenther; and Kohnle, Josef, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Catalyst system for the polymerization of olefins. 3,809,657, Cl. 252-429.00c.

Muhl, Andrew H. Temperature control system for an electrode type liquid heater. 3,809,857, Cl. 219-286.000.
Muhlbach, Anton; and Lauckhardt, Gerhard, to USM Corporation. Apparatus for rounding welded edge seams. 3,809,306, Cl. 228-5.000.
Muir, Gregory A.; and Scherer, Craig J. Method and system for visually conveying alarm information. 3,810,097, Cl. 340-164.000.
Mukai, Noboru: *See*—
Ishida, Kengo; Kawai, Masanobu; and Mukai, Noboru, 3,809,780.
Mulaskey, Bernard F.: *See*—
Kemp, Jacob D.; and Mulaskey, Bernard F., 3,809,728.
Mulasmajic, Dzemal. Anti-friction vehicle support system. 3,809,433, Cl. 301-1.000.
Mullaney, Frank: *See*—
Wandel, Oscar A.; and Mullaney, Frank, 3,809,307.
Muller, Hans. Fermentation installation. 3,809,618, Cl. 195-140.000.
Muller, Johannes Jacobus; and Kock, Theodorus Joannes, to Lever Brothers Company. Interesterification of glycerides in the presence of an aliphatic ketone. 3,809,709, Cl. 260-410.700.
Muller, Rudolf: *See*—
Heiler, Wolfgang; Muller, Rudolf; and Becker, Jean-Jacques, 3,808,993.
Muller, Walter, to Ruti Machinery Works Ltd.; formerly Casper Honegger Ruti. Device for transferring a portion of weft thread to a weft inserting means. 3,809,129, Cl. 139-12.000.
Muller, Willi, to Siemens Aktiengesellschaft. Electro-optical device for measuring the voltage on a high-voltage conductor. 3,810,013, Cl. 324-96.000.
Muller-Scherak, Wolf Georg. Apparatus for closed cycle dispensing of individual items. 3,809,287, Cl. 221-66.000.
Munafro, Vincent J. Electrical apparatus providing self-teaching assistance. 3,809,784, Cl. 35-9.00b.
Muncke, Ludwig; Buchmuller, Josef; and Stieler, Konrad, to Deere & Company. Axial piston hydraulic motor. 3,808,949, Cl. 91-473.000.
Munk, Edmund E., to Furnier-& Sperrholzwerk J. F. Werz Jr. KG Werzalig-Pressholzwerk. Method of producing molded elements with parts of different thicknesses for fibrous mixtures. 3,809,736, Cl. 264-120.000.
Munson, Robert E.: *See*—
Krutsinger, Jack K.; Bullai, Carl N.; and Munson, Robert E., 3,810,183.
Murakami, Junzo; Asakawa, Shigeo; and Takeuchi, Keiji, to Tokyo Shibauro Electric Co., Ltd. Decoding system. 3,810,158, Cl. 340-347.0da.
Murata, Sanjiro. Mode changeover apparatus for a miniature type cassette tape recorder. 3,810,241, Cl. 360-96.000.
Murphy, Harold J.: *See*—
Kilroy, Henry P.; and Murphy, Harold J., 3,810,195.
Murray, Thomas R.; and Burns, David C., to Westinghouse Electric Corporation. Reactor vessel in-service inspection assembly. 3,809,607, Cl. 176-19.00r.
Musser, Harry R.; and Jackson, Winston J., Jr., to Eastman Kodak Company. Brominated bisphenol a diethanol polyforman. 3,809,681, Cl. 260-52.000.
Mustakas, Gus C., to United States of America, Agriculture. Process for obtaining full-fat oilseed-protein beverages. 3,809,771, Cl. 426-364.000.
Myles, Michael Joseph: *See*—
Kupcikevicius, Vytautas; and Myles, Michael Joseph, 3,808,638.
Nacci, Anthony T.: *See*—
Jolly, Michael D.; Jasovsky, George A.; Ceglie, Gaetano J.; Nacci, Anthony T.; and Schechter, Harold, 3,809,770.
Nadella: *See*—
Pitner, Alfred, 3,809,446.
Nadler, Bernard David; and Cotter, Mitchell A., to APM Corporation. System for storing tone patterns for audible retrieval. 3,810,106, Cl. 340-172.500.
Nagao, Tachiro: *See*—
Nakahara, Tsuneo; Kurauchi, Noritaka; and Nagao, Tachiro, 3,810,186.
Nagaoka, Shinji: *See*—
Kitai, Kiyoshi; Onda, Eiichi; Koyama, Mitsuo; Nagaoka, Shinji; and Nakagawa, Tadashi, 3,810,223.
Kitai, Kiyoshi; Onda, Eiichi, Koyama, Mitsuo; Nagaoka, Shinji; and Nakagawa, Tadashi, 3,810,224.
Nagasawa, Masao: *See*—
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Nagasawa, Masao, to Nippondenso Co., Ltd. Contactless ignition system for internal combustion engines. 3,809,043, Cl. 123-148.00e.
Nagata, D., Co., Ltd.: *See*—
Moribe, Kamataro, 3,809,196.
Nagy, Charles E.; and Nagy, John F. Automatic coupling mechanism for submarines dirigibles and other like buoyant vehicles. 3,809,002, Cl. 114-235.00b.
Nagy, John F.: *See*—
Nagy, Charles E.; and Nagy, John F., 3,809,002.
Najmann, Knut K.: *See*—
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Nakagawa, Junichi: *See*—
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Kitai, Kiyoshi; Onda, Eiichi; Koyama, Mitsuo; Nagaoka, Shinji; and Nakagawa, Tadashi, 3,810,224.
Nakagawa, Tadashi, to Sieko Koki Kabushiki Kaisha. Switching device for electronic shutter. 3,810,222, Cl. 354-226.000.
Nakahara, Tsuneo; Kurauchi, Noritaka; and Nagao, Tachiro, to Sumitomo Electric Industries, Ltd. Leaky coaxial cable. 3,810,186, Cl. 343-771.000.
Nakajima, Fumio: *See*—
Nikaido, Akira; Onda, Mitsuo; Machida, Takayasu; Nakajima, Fumio; and Yanagawa, Yoshihiki, 3,808,792.
Nakajima, Masamitsu, to Kyoto University. Traveling-wave type power addition circuit. 3,810,037, Cl. 331-55.000.
Nakajima, Shigeo, to Taiheiyo Coal Mining Co., Ltd. Driving device for ranging-type coal planers. 3,809,431, Cl. 299-34.000.
Nakamoto, Yasunori: *See*—
Hamada, Yoshitugu; Nakamoto, Yasunori; and Jinno, Seizo, 3,808,955.
Nakamura, Hirokazu; and Ito, Tadahiko, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Exhaust gas purifying device. 3,808,806, Cl. 60-288.000.
Nakamura, Shoichi: *See*—
Okubo, Tsuneo; Nakamura, Shoichi; and Mori, Eizo, 3,809,918.
Nakamura, Tomizo: *See*—
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Nakamura, Yukio, to Seiko Koki Kabushiki Kaisha. Lens shutter for photographic use. 3,810,225, Cl. 354-252.000.
Nakayama, Takashi: *See*—
McMunn, Charles William, III; and Nakayama, Takashi, 3,809,797.
Nakayama, Yoshiaki: *See*—
Yamada, Hirohide; and Nakayama, Yoshiaki, 3,810,114.
Nanba, Yasuhiro; and Sahara, Masayoshi, to Minolta Camera Kabushiki Kaisha. Photographic camera scene brightness indicator. 3,810,208, Cl. 354-60.000.
Nara, Hirohisa: *See*—
Kimura, Hiroshiro; Arimoto, Heiji; Nara, Hirohisa; Miyamatsu, Tsugio; and Kitajima, Mitsuo, 3,809,131.
Narayanan, Venkatachala L.: *See*—
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Miller, Gerlad K.; and Rautiola, Norman A., 3,810,149.
Nash, Charles F.: *See*—
Berman, Irwin; Henschel, Robert; Pai, David H.; Nash, Charles F.; Mack, Anthony M.; and Alfano, Bernardino M., 3,808,880.
Natens, Luc Yves, to Agfa-Gevaert N.V. Method of measuring optical density. 3,809,911, Cl. 250-571.000.
Nathanson, Bennett: *See*—
Vogelfanger, Elliot A.; and Nathanson, Bennett, 3,809,591.
Nation, Melvin S., to Motorola, Inc. Locking clip for fastening an article to a belt or the like. 3,808,642, Cl. 24-3.00f.
National Cash Register Company: *See*—
Connell, Kenneth Percy, 3,808,668.
Mitchner, Joseph L.; Keller, Robert A.; and Graham, Clyde B., 3,808,669.
National Cash Register Company, The: *See*—
Hays, John D.; Baswell, Harlen L.; Combs, Jerry A.; and Brown, Dale G., 3,809,989.
Stansbrey, John J., 3,809,606.
National Research Development Corporation: *See*—
Aspinall, Arnold; Spruce, David Gordon; and Lynam, John Thomas, 3,810,000.
Jordan, James Redmon, 3,810,113.
Navarro, Jorge Roca. Roasting device. 3,809,053, Cl. 126-25.00r.
Neal, Danny Marvin, to International Business Machines Corporation. Thermal sensing apparatus. 3,809,855, Cl. 219-216.000.
Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek ten behoeve van Nijverheid: *See*—
Collet, Peter Jacobus, 3,809,499.
Neel, Jean; and Papillon, Bernard, to Societe Rhone-Progil. Dry cleaning of textiles. 3,809,535, Cl. 8-142.000.
Negishi, Masataka, to Mamiya Koki Kabushiki Kaisha. Circuit for storing a representation of an incident light quantity in a camera. 3,809,992, Cl. 320-1.000.
Neil, Peter C., to Standard Oil Company (Indiana). Transporting and trimmer apparatus for plastin film having thermoformed articles therein. 3,808,927, Cl. 83-228.000.
Nellis, David C., to Itek Corporation. Microfilm frame selection circuitry. 3,809,910, Cl. 250-561.000.
Nelson, Donald R., to Goddard Industries, Inc. Mixing valve. 3,809,124, Cl. 137-625.410.
Nelson, Rodney W., to Robertshaw Controls Company. Automatic pilot valve magnet contact construction. 3,810,054, Cl. 335-220.000.
Nelson, William F.: *See*—
Haugsjaa, Paul O.; Heller, Adam; Nelson, William F.; and Bocchimuzzo, Anthony, 3,809,828.
Nesta, Charles; Jackson, Earl V.; Hoesly, David D.; Schoppe, Wayne F.; Squassoni, Gino F.; and Warter, Peter J., to Xerox Corporation. Photoelectrophoretic imaging apparatus with correction for parallax. 3,809,471, Cl. 355-3.00p.

Neugebauer, Gerhard, to Wiegand, Alexander, Armaturen- und Manometerfabrik. Pressure transmitting device. 3,808,890, Cl. 73-406.000.

Neuman, August. Sewer opening adapter means. 3,808,611, Cl. 4-255.000.

Neuman, Henry J., to Addressograph-Multigraph Corporation. Liquid amine-type developer for diazotype materials. 3,809,559, Cl. 96-49.000.

Neuman, Henry J. Amine-type developer for diazotype materials. 3,809,560, Cl. 96-49.000.

Neumann, Gerhard Max; and Wittemeier, Hans-Joachim, said Neumann assor. to Delbag-Luftfilter Gesellschaft mit beschrankter Haftung. Overhead air filter. 3,808,777, Cl. 55-473.000.

Neunherz, Herbert W.; and Bryant, Robert G., to Gem Industries, Inc. Trip lock. 3,809,414, Cl. 292-4.000.

Newell Industries, Inc.: *See—*
Furst, Marcel, 3,809,218.

Newgent, Jack S. Golf course water collector apparatus. 3,808,739, Cl. 47-1.500.

Newman, James W., to Windings, Inc. Sealed package of flexible material and method of making the same. 3,809,222, Cl. 206-398.000.

Newman, Roger. Portable heater for an automobile. 3,809,527, Cl. 432-62.000.

Nibby, Chester M.; Manton, John C.; and Curley, John L., to Honeywell Information Systems, Inc. Apparatus and method for a variable memory cycle in a data processing unit. 3,809,884, Cl. 340-172.500.

Nichols, Charles E., Jr.; and Howard, Gerald T., to Merry Companies Incorporated. Concrete block or the like with multiple brick facing and method of making the same. 3,809,595, Cl. 156-267.000.

Nicholson, James F.: *See—*
Bourg, Haden J., Jr.; and Nicholson, James F., 3,809,941.

Nick, Charles F.; and Davidson, Morris J., to Dresser Industries, Inc. Engine torque control system. 3,808,882, Cl. 73-117.300.

Nickl, Johann: *See—*
Mueller-Tamm, Heinz; Urban, Friedrich; Frielingsdorf, Hans; Nickl, Johann; Schweier, Guenther; and Kohnle, Josef, 3,809,657.

Niemiec, Stanley Joseph: *See—*
Heuner, Robert Charles; and Niemiec, Stanley Joseph, 3,809,458.

Nicmoller, Arthur B.; and Ford, Fred H., to Westinghouse Electric Corporation. Post-type insulator assembly for enclosed electric bus. 3,809,801, Cl. 174-99.00b.

Nihon Denshi Kabushiki Kaisha: *See—*
Aihara, Ryuzo; Ota, Susumu; and Kobauashi, Nobuyuki, 3,810,025.

Nihon Kikai Kogiyo Co., Ltd.: *See—*
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Nikaido, Akira; Onda, Mitsuo; Machida, Takayasu; Nakajima, Fumio; and Yanagawa, Yoshihiki, to Citizen Watch Company Limited. Drive mechanism of an electric timepiece. 3,808,792, Cl. 58-28.00a.

Nimura, Takao; Jin, Kunio; and Komatsu, Hajime, to Konishiroku Photo Industry Co., Ltd. Method for processing light-sensitive silver halide color photographic materials. 3,809,563, Cl. 96-22.000.

Niogret, Gilbert, to Rhone-Poulenc S.A. Fluid separation apparatus and membrane support frames therefor. 3,809,246, Cl. 210-232.000.

Nippon Crucible Company Limited: *See—*
Iida, Hirofumi, 3,809,378.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
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Dautsch, Ralph, 3,809,789.
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Nippon Kagaku K.K.: *See—*
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Nippon Kokan Kabushiki Kaisha: *See—*
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Nippon Oil Company Limited: *See—*
Araki, Yoshihiko; Sato, Naotake; and Takahashi, Mikio, 3,809,662.

Nippon Steel Corporation: *See—*
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Nippondenso Co., Ltd.: *See—*
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Nagasawa, Masao, 3,809,043.

Nishino, Rintaro, to Tamura Electric Works, Ltd. Luminous display panel with geometric segment matrix and diffuser panel. 3,810,168, Cl. 340-383.000.

Nishizawa, Jun-Ichi, to Semiconductor Research Foundation. Method of and device for controlling optical conversion in semiconductor. 3,809,953, Cl. 317-235.00n.

Niu, Hsien Ying; and Weipert, Eugene A., to Basf Wynadotte Corporation. Stabilization of polyoxyalkylene polyethers. 3,809,723, Cl. 260-611.500.

Noguchi, Masataka: *See—*
Yamaguchi, Yoshihiro; Matsushita, Tomiharu; Noguchi, Masataka; Nakagawa, Junichi; and Hasegawa, Hakumi, 3,808,860.

Nongbri, Govanon: *See—*
Johnson, Axel R.; Wolk, Ronald H.; and Nongbri, Govanon, 3,809,644.

Nordli, Bjarne; Oftedal, Tor Audun; and Wulvik, Erik A. Heating unit. 3,809,526, Cl. 432-36.000.

Nordstrom, Carl G.: *See—*
Byers, Donald W.; Petry, Chester H., Jr.; Nordstrom, Carl G.; and Hensley, James Carl, 3,808,722.

Norris, Clarence G.; and Merrick, Woodrow W., to General Refractories Company. Refractory brick having a metal casing. 3,808,764, Cl. 52-575.000.

North American Rockwell Corporation: *See—*
White, Stanley A.; and Raper, Hubert L., 3,810,182.

Northern Electric Company, Limited: *See—*
Pryce, William; and Foster, Eric, 3,808,919.

Northrup, King & Co.: *See—*
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Norton Company: *See—*
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Norton, David John: *See—*
Brown, Christopher Robert; George, Terence Malcolm; and Norton, David John, 3,809,930.

Notin, Claude Jacques, to Etablissements Minet. Press-devices. 3,808,968, Cl. 100-264.000.

Nottingham, Frank O., Jr. Phase adapter. 3,809,980, Cl. 318-220.00r.

Novak, Lubomir: *See—*
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Novotny, Joseph: *See—*
Sansing, James Earl; and Novotny, Joseph, 3,809,653.

Nozawa, Yoshikuni, to Sankyo Kogaku Kogyo Kabushiki Kaisha. Tape recorder. 3,810,237, Cl. 360-96.000.

Nozawa, Yoshikuni, to Sankyo Kogaku Kogyo Kabushiki Kaisha. Tape recorder. 3,810,240, Cl. 360-96.000.

Nunez, Julio de Castro. Machine for the continuous manufacture of hollow elements. 3,809,514, Cl. 425-112.000.

Nuova San Giorgio S.p.A.: *See—*
Viglione, Giovanni, 3,808,788.

Nuttall, Michael W.: *See—*
Gay, Derek J.; Smedley, William H.; Cohen, Aaron G.; Dworkin, Darryl R.; Nuttall, Michael W.; and Wilson, Nicol S., 3,808,732.

Oak Industries, Inc.: *See—*
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Oakes, James A.: *See—*
Brown, Ronald E.; and Oakes, James A., 3,809,625.

Oakes, Vincent; and Iles, Brian Rodney, to Interstab Limited. Stabilisation of vinyl polymers. 3,809,677, Cl. 260-45.75k.

Oberg, Anders B., to Svenska Dataregister AB. Article coding system. 3,809,863, Cl. 235-61.11e.

Oberle, Arthur, to Brown Boveri & Company Limited. Combined emergency stop and governor valve for controlling fluid flow to a turbo-machine. 3,809,126, Cl. 137-630.140.

Occidental Energy Development Company, mesne: *See—*
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Oda, Albert Y.: *See—*
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Odynski, George: *See—*
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Oeming, Joseph A.; Heffrom, Allan J.; and Estry, Arthur L., 1/2 to C.M. Systems, Incorporated and 1/2 to Crankshaft Machine Company. Divided drive single spindle crankshaft machine. 3,808,653, Cl. 82-9.000.

Offenhauser, Fred C.: *See—*
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Offermanns, Heribert: *See—*
Udluft, Klaus; Weigert, Wolfgang; Offermanns, Heribert; and Wagner, Hans, 3,809,716.

Officine Savio S.p.A.: *See—*
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Oftedal, Tor Audun: *See—*
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Ogasaware, Shoji; and Tamate, Teruzo, to Alps Electric Co., Ltd. Preset device of UHF tuner. 3,808,896, Cl. 74-10.600.

Ogawa, Shimeo; Shinozaki, Koji; and Chida, Shinpei, to Yamura Kabushiki Kaisha Shinkoseisakusho. Chinese character (Kanji) teleprinter or a Chinese character (Kanji) punching typewriter or similar apparatus. 3,809,203, Cl. 197-1.00a.

Ogawa, Shimeo, to Yamura Kabushiki Kaisha Shinkoseisakusho. Keyboard system for Chinese character teleprinter, Chinese character typewriter, monotype etc. 3,809,204, Cl. 197-1.00a.

O'Hara, Peter J.: *See—*
Lang, Charles W.; and O'Hara, Peter J., 3,810,136.

Ohlhoff, Hans-Jurgen, to Wieland-Werke AG. Circular saw machines. 3,808,922, Cl. 83-168.000.

Ohma, John Raymond. Crank system. 3,808,897, Cl. 74-44.000.

Ohniwa, Kazuhiro; and Ishikawa, Seuti, to Kabushiki Kaisha Tadano Takkosho. Boom extension means. 3,809,248, Cl. 212-55.000.

Ohta, Masanori. Method for treating oil-containing wastes, 3,809,631, Cl. 204-149.000.

Okabe, Katsuhiko, to Kabushikikaisha. Thermosensitive line printer. 3,810,192, Cl. 346-79.000.

Okawa, Sohei; and Doi, Shuhei, to Mitsubishi Petrochemical Co., Ltd. Method for antiblocking high pressure process polyethylene film. 3,809,671, Cl. 260-41.00r.
Okino, Yoshihiro: *See—*
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Okubo, Hideyo: *See—*
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Okubo, Tsuneo; Nakamura, Shoichi; and Mori, Eizo, to Matsushita Electric Industrial Co., Ltd. Program apparatus. 3,809,918, Cl. 307-41.000.
Okuno, Noboru; Kamogawa, Toshiro; and Okino, Yoshihiro, to Matsushita Electric Industrial Co., Ltd. Automatic switching device for EVR players. 3,809,804, Cl. 178-5.20d.
Old Colony Hosiery Mills, Inc.: *See—*
Fisher, Max; and Gardner, Paul S., 3,808,842.
Oldfield, Howard P., to Worcester Textile Company. Apparatus for controlling the amount of elastic stretch in stretch woolens. 3,808,844, Cl. 68-5.00d.
Olin Corporation: *See—*
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Bowman, Cader E.; and Lapins, Daniel W., 3,809,054.
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Olivetti, Ing. C., & C., S.p.A.: *See—*
Dalmasso, Claudio, 3,808,679.
Ollinger, James C.; and Wasson, Kenneth L., to Armstrong Cork Company. Direct attachment of acoustical suspension runners to metal deck roof. 3,808,763, Cl. 52-481.000.
Olsen, Willi; and Lorenz, Dieter, to Siemens Aktiengesellschaft. Means for adjusting a conductor in high voltage electrical equipment. 3,809,795, Cl. 174-28.000.
Olson, James R.: *See—*
Merrill, Stewart H.; and Olson, James R., 3,809,554.
Olsson, Anders E. I. Pressure reduction valve. 3,809,111, Cl. 137-503.000.
Olympus Optical Company, Limited: *See—*
Iiyama, Akihiro; and Gomita, Minoru, 3,808,675.
Omietanski, George Michael: *See—*
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Zajac, Donald M.; and Kubota, James, 3,810,073.
Onda, Eiichi: *See—*
Kitai, Kiyoshi; Onda, Eiichi; Koyama, Mitsuo; Nagaoka, Shinji; and Nakagawa, Tadashi, 3,810,223.
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Ono, Shigeo; and Hamaguchi, Ichiro, to Nippon Kagaku K.K. Device for controlling shutter exposure time. 3,810,226, Cl. 354-51.000.
Ono, Yasuhiro, to Iwasaki Tsushinki Kabushiki Kaisha; a/k/a Iwatsu Electric Co., Ltd. Telephone set circuti. 3,810,247, Cl. 179-81.00r.
Oota, Shiro; and Yonezawa, Keitaro. Pressure responsive valve. 3,809,117, Cl. 137-493.600.
Opittek, Eugene W.: *See—*
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Opratko, Vaclav; Bell, James Alexander Evert; and Ferrajuolo, Roberto Vincenzo. Acid leaching of lateritic ore. 3,809,549, Cl. 75-101.00r.
Optel Corporation: *See—*
Goldmacher, Joel E.; and Tayag, Miguelita G., 3,809,456.
Opti-Cap, Inc.: *See—*
Holmes, Allie B., 3,809,150.
Orban, Jean: *See—*
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Orlando, Anthony W.: *See—*
McGinnis, Bernard W.; and Orlando, Anthony W., 3,810,243.
Orlowski, Donald W.; and Eul, Edward A., Jr. Ampex Corporation Demagnetizer and cleaning cartridge. 3,810,230, Cl. 360-128.000.
Osaka University, President of: *See—*
Ishimaru, Toshiyasu, 3,809,699.
Osland, James M., to Ketcham & McDougall, Inc. Automatic letter opener. 3,808,926, Cl. 83-356.100.
Osman, Martin S., to Polaroid Corporation. Film transport system for photographic cassette having self-contained film processing system. 3,809,327, Cl. 242-71.000.
Ostfeld, David Martin; and Togneri, Mauro Guiseppe. Data handling system. 3,810,153, Cl. 340-347.0ad.
Oswalt, Leon Marvin: *See—*
Park, Wayne Austin; and Oswalt, Leon Marvin, 3,809,280.
Ota, Katsumi: *See—*
Mori, Chiharu; Ota, Katsumi; and Togawa, Hideaki, 3,810,203.
Ota, Susumu: *See—*
Aihara, Ryuzo; Ota, Susumu; and Kobauashi, Nobuyuki, 3,810,025.
Otto, C., Dr., & Comp. G.m.b.H.: *See—*
Drebes, Friedrich-Wilhelm; and Birresborn, Gunter, 3,809,619.
Wackerbarth, Folkard; and Beck, Kurt-Gunther, 3,809,620.
Outboard Marine Corporation: *See—*
Jereb, Richard F.; and Anderson, Philip A., 3,809,044.
Jereb, Richard F., 3,810,056.
Owens-Corning Fiberglas Corporation: *See—*
Gelin, Robert J., 3,809,739.
Hurley, Raymond E., 3,808,789.
Owens-Illinois, Inc.: *See—*
Camp, Harold E.; and Grier, John D., 3,810,198.
Pei, Yu K., 3,809,599.
Oyaba, Takashi, to Pioneer Electronic Corporation. Multiple cartridge tape recorder/reproducer head shifting assembly. 3,809,827, Cl. 360-106.000.
Oyama, Yoshishige: *See—*
Hosho, Yukio; Moriya, Hisanori; and Oyama, Yoshishige, 3,809,042.
Ozawa, Kazunori; and Takahashi, Katsumasa, to Sony Corporation. Single crystal ferrite magnetic head. 3,810,245, Cl. 360-127.000.
Padilla, Benjamin A. Conveyor system. 3,809,211, Cl. 198-192.00r.
Paffett, James Arthur Haines: *See—*
Horsford, Anne; Lewison, George Richard Grant; and Paffett, James Arthur Haines, 3,809,000.
Paglia, Richard: *See—*
Wareham, Richard R.; and Paglia, Richard, 3,810,211.
Paglia, Richard, to Polaroid Corporation. Detachable spread roller housing section. 3,810,220, Cl. 354-212.000.
Pai, David H.: *See—*
Berman, Irwin; Henschel, Robert; Pai, David H.; Nash, Charles F.; Mack, Anthony M.; and Alfano, Bernardino M., 3,808,880.
Palar (Curacao) N.V.: *See—*
Chromy, Franz, 3,808,938.
Palma, Joseph; and Christiansen, Henning, to Lyon & Healy, Inc. Harp truck. 3,809,231, Cl. 206-314.000.
Palmer, Leon B., to Congoleum Industries, Inc. Process of making indentation recovery polyvinyl chloride surface covering by reacting the cellulosic felt backing with a cross-linking agent and product produced thereby. 3,809,534, Cl. 8-115.600.
Pamer, Karl A., to McNeil Corporation. Fluid thrust device. 3,809,382, Cl. 267-65.00a.
Panchal, Navnit: *See—*
McLaren, Vincent H., Jr.; and Panchal, Navnit, 3,808,917.
Papillon, Bernard: *See—*
Neel, Jean; and Papillon, Bernard, 3,809,535.
Papst-Motoren KG, Ltd., Co.: *See—*
Schlicker, Volker; and Wrobel, Gunter, 3,809,503.
Paragon Wire & Cable Corporation: *See—*
Gaul, Robert G., 3,809,331.
Pariel, Jean-Marie: *See—*
Wang, Robert; and Pariel, Jean-Marie, 3,809,525.
Park, Lester D.: *See—*
Rothfuss, Robert G.; and Park, Lester D., 3,808,620.
Park, Wayne Austin; and Oswalt, Leon Marvin, to Cato Oil and Grease Co. Closures for containers. 3,809,280, Cl. 220-42.00c.
Parker, Winfred E.: *See—*
Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., 3,809,706.
Parks, William Louis; Grenoble, William Luster, Jr.; Harjes, Henry Herman, Jr.; and McCarthy, Lawernce James, to Telserve Inc. System for transmission and analysis of biomedical data. 3,810,102, Cl. 340-172.500.
Parkson Corporation: *See—*
Minor, Paul S., 3,809,708.
Parson, Ronald F., to Graco Inc. Safety circuit for electrostatic spray gun. 3,809,955, Cl. 317-3.000.
Paskert, Joseph H.: *See—*
Moran, Thomas M.; and Paskert, Joseph H., 3,808,635.
Passpoint Corporation: *See—*
Aaron, Albert Glenn, 3,809,919.
Patel, Arvind M., to International Business Machines Corporation. Data coding with stable base line for recording and transmitting binary data. 3,810,111, Cl. 340-172.500.
Patentverwertungs- und Finanzierungsgesellschaft Serania AG: *See—*
Schmid, August; and Goens, Georges, 3,809,400.
Paynter, Donald A.: *See—*
Burpee, Lee E.; and Paynter, Donald A., 3,810,172.
Pearce, Larry Neil, to Baxter Laboratories, Inc., mesne. Replicating apparatus with locking means. 3,808,969, Cl. 101-72.000.
Pearson, Frank Arthur, to Gulf & Western Industries, Inc. Relay clutch timer. 3,810,050, Cl. 335-75.000.
Pearson, Stanley, to Crescent Insulated Wire & Cable Company, Inc. Round electric cable for severe environmental operation and method of manufacture thereof. 3,809,802, Cl. 174-103.000.
Pearson, William M.: *See—*
Mueller, John W.; and Pearson, William M., 3,809,114.
Peaslee, Robert L. Metal foil-making process. 3,809,553, Cl. 75-213.000.
Pei, Yu K., to Owens-Illinois, Inc. Method for forming glass-ceramic articles. 3,809,599, Cl. 161-1.000.
Pekarek, William R., to Aluminum Company of America. Clip and hanger structure for buildings. 3,809,347, Cl. 248-48.100.

Pekau, Dietlind; and Kiemle, Horst, to Siemens Aktiengesellschaft. Coupling device for optical wave guides. 3,809,455, Cl. 350-96.0wg.
Peltonen, Lahja Arvid, to Valmet Oy. Lateral container grabber having carrying pins at the upper corners of the containers. 3,809,270, Cl. 214-621.000.
Peltzer & Ehlers: *See—*
Koch, Friedrich-Karl; and Rahn, Oskar, 3,809,255.
Pemcor, Inc.: *See—*
McGlashan, Kenneth W., 3,810,053.
Pentron Industries, Inc.: *See—*
Sampey, Harry R., 3,809,864.
Perry, E. S., Limited: *See—*
Ebdon, Ronald William, 3,808,793.
Perry, Lawrence. Carton assembling apparatus. 3,808,959, Cl. 93-53.0ac.
Persios, Georgia J., to Amazon Natural Drug Company, The. Topical pharmaceutical composition and method employing sap from the tree croton lechleri. 3,809,749, Cl. 424-195.000.
Persson, Eric J.: *See—*
Chayka, George A.; Persson, Eric J.; and Ziobro, Norbert M., 3,810,016.
Persson, Gert Artur; and Severinsson, Lars Mattis, to Svenska Aktiebolaget Bromsregulator. Force transmitting device of a weighing valve for a vehicle. 3,808,954, Cl. 92-65.000.
Persson, Hans-Uno: *See—*
Fortuna, Achille C.; and Persson, Hans-Uno, 3,810,020.
Persson, Karl Rune, to Sprinter Pack AB. Coupling or lock between two sheets of different materials such as carton and plastic. 3,809,305, Cl. 229-45.000.
Peruglia, Marco, to Fiat Societa per Azioni. Delivery limiting valve unit for refrigeration curcuits. 3,808,829, Cl. 62-217.000.
Petcher, Rhett R. Nut harvesting device. 3,808,785, Cl. 56-328.000.
Peters, Armin, to Rohe, A. Method and apparatus for drying washed motor vehicles and for heating the washing and drying stations. 3,808,698, Cl. 34-33.000.
Peterson, Arthur H.; and Britz, Galen C., to Minnesota Mining and Manufacturing Company. Low-friction slide bearings. 3,809,442, Cl. 305-14.000.
Peterson, Ronald M. Boat hull construction to provide stern lift. 3,808,999, Cl. 114-66.50s.
Petigara, Ramesh B.: *See—*
Yale, Harry L.; and Petigara, Ramesh B., 3,809,698
Petrie, James Alexander: *See—*
Gilbert, Ronald Albert; Petrie, James Alexander; and Bracey, Kenneth Edward George, 3,808,913.
Petro, Jozsef: *See—*
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Petrolite Corporation: *See—*
Lucas, Roy N., 3,808,795.
Redmore, Derek, 3,809,694.
Petry, Chester H., Jr.: *See—*
Byers, Donald W.; Petry, Chester H., Jr.; Nordstrom, Carl G.; and Hensley, James Carl, 3,808,722.
Pettersson, Sven-Olof: *See—*
Aslund, Nils Robert Dahr; Pettersson, Sven-Olof; and Angelstrand, Sten Borje, 3,809,482.
Pfaff Industriemaschinen GmbH: *See—*
Dobner, Reinhold; Willenbacher, Erich; and Baus, Wolfgang, 3,808,995.
Mall, Gunther, 3,808,992.
Pferd, William; and Witt, Eugene Francis, to Bell Telephone Laboratories, Incorporated. Blast-actuated control system. 3,810,141, Cl. 340-240.000.
Pfundstein, Karl; and Fallert, Erich, to Bopp & Reuther GmbH. Shutoff valve. 3,809,361, Cl. 251-305.000.
Phelon, R. E., Company, Inc.: *See—*
Burson, Bob O.; and Phelon, Russell Dale, 3,809,040.
Phelon, Russell Dale: *See—*
Burson, Bob O.; and Phelon, Russell Dale, 3,809,040.
Phifer, William M. Artist's easel. 3,809,354, Cl. 248-449.000.
Philadelphia Handle Company, Inc.: *See—*
Szabo, Marton J., 3,808,634.
Philco-Ford Corporation: *See—*
Gregerson, David A.; and Arora, Vinod K., 3,809,510.
Philip Morris Incorporated: *See—*
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Phillip Fibers Corporation: *See—*
Blore, James H.; and Balcombe, Bobby L., 3,808,843.
Phillips Petroleum Company: *See—*
Alquist, Henry E., 3,809,039.
Harper, Ernest A.; and Bailey, Dunn M., 3,808,826.
Johnson, Marvin M.; and Kuper, Donald G., 3,809,727.
Williams, Ralph P., 3,809,655.
Phillips, Wendell Gary, to Monsanto Company. N,N' -substituted thiooxaamide, S-oxides. 3,809,702, Cl. 260-326.400.
Philo, Kenneth W. Self-powered casing for forming cast-in-place piles. 3,808,821, Cl. 61-53.640.
Piccone, John G., to Singer Company, The. Method and system for inter-character apace modification to adjust the length of a line of copy to fit an allotted line length. 3,810,197, Cl. 354-9.000.
Pielkenrood, Simon, to Pielkenrood-Vinitex N.V. Vibration suppressing table. 3,808,983, Cl. 108-136.000.
Pielkenrood-Vinitex N.V.: *See—*
Pielkenrood, Simon, 3,808,983.
Pieper, Wilhelm: *See—*
Sieben, Karl Heinrich; and Pieper, Wilhelm, 3,808,930.
Pilarczyk, Karol, to Carrier Corporation. Interchangeable compressor drive. 3,809,493, Cl. 415-199.00a.
Pilch, John S., to Ware Machine Works, Inc. Telescopic apparatus. 3,809,250, Cl. 212-55.000.
Pilkington Brothers Limited: *See—*
Gaskell, Philip Hedley; Lythgoe, Stanley; Irlam, Philip Sidney; Miller, Robert Percy; and Barry, Thomas Ian, 3,809,543.
Lythgoe, Stanley; and Irlam, Philip Sidney, 3,809,542.
Pioneer Electronic Corporation: *See—*
Oyaba, Takashi, 3,809,827.
Pipa, William J., to Dicker International, Inc. Toy wind instrument having simulated valve controls forming switch buttons. 3,808,733, Cl. 46-44.000.
Pipes, George R., to Kenway Engineering, Incorporated. Handle engaging tote pan retractor. 3,809,259, Cl. 214-16.40a.
Pirochta, John F., Jr., to General Motors Corporation. Vehicle drive axle wheel assembly. 3,809,177, Cl. 180-88.000.
Pitner, Alfred, 1/2 to Nadella. Thrust rolling bearing. 3,809,446, Cl. 308-217.000.
Pitstick, Martin H., to General Electric Company. Rack level adjustment system in a dishwasher. 3,809,451, Cl. 312-351.000.
Pittman, Allen G.; and Wasley, William L., to United States of America, Agriculture. Siloxane polymers for soil-repellent and soil-release textile finishes. 3,809,783, Cl. 260-46.50y.
Plasser, Franz; and Theurer, Josef. Mobile track gage surveying apparatus. 3,808,693, Cl. 33-144.000.
Plazier, Nico, to Hoogovens Ijmuiden B.V. Metal factory with at least one tiltable converter. 3,809,376, Cl. 266-16.000.
Plegat, Alain Edouard, to Societe Anonyme des Usines Chausson. Apparatus for continuously forming a tube and continuously cutting the tube into substantially uniform lengths. 3,808,861, Cl. 72-132.000.
Plegat, Alain Edouard, to Societe Anonyme des Usines Chausson. Apparatus for cutting continuously advancing tubes. 3,808,923, Cl. 83-196.000.
Plegat, Alain Edouard, to Societe Anonyme des Usines Chausson. Apparatus for cutting a continuously advancing tube into sections of equal length. 3,808,928, Cl. 83-289.000.
Plessey Handel und Investments A.G.: *See—*
Beddoe, Stanley, 3,809,839.
Davies, Anthony Roger, 3,808,950.
Henning, Michael Laurence, 3,809,912.
Plummer, Walter A.: *See—*
Bannies, Hans E., 3,808,665.
Plummer, William T., to Polaroid Corporation. Viewfinder for a reflex camera. 3,810,221, Cl. 354-219.000.
Plunkett, George B.; Plunkett, Patricia M.; Kroh, Loren H.; and Kroh, Elizabeth H. Rim lock conversion set. 3,808,855, Cl. 70-440.000.
Plunkett, Patricia M.: *See—*
Plunkett, George B.; Plunkett, Patricia M.; Kroh, Loren H.; and Kroh, Elizabeth H., 3,808,855.
Polaroid Corporation: *See—*
Bennett, Stewart, 3,809,464.
Biber, Conrad H., 3,810,212.
Brandt, Edison R., 3,809,878.
Downey, Rogers B., 3,809,104.
Feingold, Michael H., 3,809,704.
Gross, T. A. O.; and Wilson, Stewart W., 3,810,188.
Land, Edwin H.; and Douglas, Lawrence M., 3,810,201.
Mason, Paul B., 3,809,465.
Osman, Martin S., 3,809,327.
Paglia, Richard, 3,810,220.
Plummer, William T., 3,810,221.
Wareham, Richard R.; and Paglia, Richard, 3,810,211.
Polevy, John Henry; and Randall, John Justin, to Synthron Chemicals, Inc. Methoxymetylation of 3-(dialkylphosphono) propionamides. 3,809,730, Cl. 260-968.000.
Poley, Neil Myron, to International Business Machines Corporation. Multiple function vidicon tube including a transmission grid. 3,809,946, Cl. 315-11.000.
Polistina, Rocco Albert: *See—*
Schmitt, Edward Emil; Polistina, Rocco Albert; and Forgione, Peter Salvatore, 3,809,605.
Schmitt, Edward Emil; and Polistina, Rocco Albert, 3,809,683.
Polymer Corporation Limited: *See—*
Chick, Orest Nicholas; and Means, Graham Neville, 3,809,666.
Poncy, George William, to Johnson & Johnson. Sheath-package and method. 3,809,230, Cl. 206-306.000.
Ponder & Best, Inc.: *See—*
Vital, Zoltan; and Orban, Jean, 3,809,951.
Pool, Sam Lee: *See—*
Karsten, Fred W.; Evans, James D.; and Pool, Sam Lee, 3,810,148.
Poole, William F.: *See—*
Bottjer, Richard E.; Johnson, Delp W.; Poole, William F.; and Storm, James P., 3,808,754.
Pope, James C.: *See—*
Faurschou, Donald K.; Misener, Donald C.; Pope, James C.; and Hadden, Richard, 3,809,639.
Popplewell, James M.: *See—*
Anthony, William H.; and Popplewell, James M., 3,809,155.
Porret, Daniel: *See—*
Habermeier, Jurgen; Porret, Daniel; and Baumann, Dieter, 3,809,660.

Porret, Daniel; and Fatzer, Willy, to Ciba-Geigy AG. Diglycidyl compounds containing two N-heterocyclic rings. 3,809,696, Cl. 260-256.40c.
Porsche, Dr.-Ing. H.c.F., KG: *See—*
Bemsel, Walter; and Schreiner, Hermann, 3,810,086.
Porsche, Dr.-Ing. H.c.F., K.G., Firma: *See—*
Stehle, Heinz, 3,809,192.
Porter, Frederic E.; and Kaerwer, Howard E., Jr., to Northrup, King & Co. Coated seeds and methods. 3,808,740, Cl. 47-58.000.
Porter, H. K., Company, Inc.: *See—*
Fantini, Ralph S.; and Davison, Robert W., 3,809,590.
Porter, Wilson B.; and Klein, Harold T., said Porter assor. to Robbins, James S., and Assoicates, Inc. and said Klein assor. to Robbins Company, The. Earth drilling machine. 3,808,916, Cl. 81-57.190.
Portoulas, Peter G., to Ecos Corporation. Device for determining improper reversal and/or short of ground and neutral lines and amount of impedance in ground line of a three-wire A.C. outlet. 3,810,003, Cl. 324-51.000.
Possati, Mario, to Finke Italiana Marposs Soc., In Accomandita Semplice de Mario Possati & Co., mesne. Measuring apparatus including position correcting means. 3,808,696, Cl. 33-178.00e.
Post, Donald S.; and Reehil, Edward G., to Xerox Corporation. Copier fuser protector. 3,809,475, Cl. 355-14.000.
Potter Instrument Company, Inc.: *See—*
Kilroy, Henry P.; and Murphy, Harold J., 3,810,195.
Potter, Newton I.: *See—*
Barrett, William T.; and Potter, Newton I., 3,809,239.
Poujois, Robert, to Commissariat a l'Energie Atomique. Integrated amplifying device having low drift and method of compensating for the drift of an amplifying device. 3,810,031, Cl. 330-9.000.
Poulten, John H., to Poulten, John, Limited. Piston and cylinder device. 3,809,297, Cl. 222-309.000.
Poulten, John, Limited: *See—*
Poulten, John H., 3,809,297.
Povlacs, Lawrence J.; and Crawley, William B., to Akwell Industries, Incorporated. Rubber article. 3,809,090, Cl. 128-294.000.
Power Conversion, Inc.: *See—*
Jagid, Bruce E., 3,809,580.
Pozzetti, Mario; and Mordini, Claudio, to Finike Italiana Marposs-Soc. In Accomandita Semplice de Mario Possati & C. Device for calculating the mean value of a succession of data. 3,809,874, Cl. 235-183.000.
Prasse, Herbert F.; and McCormick, Harold E., to Ramsey Corporation. Method of making a hard alloy matrix containing a tungsten-boron phase. 3,809,546, Cl. 75-.5bc.
Pratt, Harry M.; Magol, Byram J.; and Money, Dudley P., to Foster Wheeler Corporation. Vapor generator mixing section support. 3,809,018, Cl. 122-510.000.
Precision Mecanique Labinal: *See—*
Bessiere, Pierre Etienne, 3,809,199.
Precision Sampling Corporation: *See—*
Harris, Rano J., Sr.; and Harris, Rano J., Jr., 3,809,298.
Prellwitz, Samuel B., to United States Steel Corporation. Detector for particulate matter in flowing gas streams. 3,809,913, Cl. 250-575.000.
Prenzel, Karl: *See—*
Siebers, Gunter; Prenzel, Karl; and Barthel, Hans, 3,808,738.
Presky, Dennis Robert: *See—*
Crowley, Lee Francis; Presky, Dennis Robert; and Missenda, Andrew Michael, 3,810,023.
Pressman, Gerald L.; and Kittredge, Thomas D., to Electroprint, Inc., mesne. Method of aperture controlled electrostatic image reproduction or constitution. 3,809,556, Cl. 96-1.00r.
Pressman, Gerald L.; and Kittredge, Thomas D., to Electroprint, Inc., mesne. Method for aperture controlled electrostatic image color reproduction or constitution. 3,809,557, Cl. 96-1.200.
Preston, Frederick A.; Tarbox, Philip B.; and Anderson, Gordon C., to Saco-Lowell Corporation. Spindle brake with articulated and detachable brake shoes. 3,808,790, Cl. 57-88.000.
Preussag Aktiengesellschaft: *See—*
Kuhlmann-Schafer, Wilhelm, 3,809,145.
Pribyl, Edward J.: *See—*
Fried, Josef; Pribyl, Edward J.; and Krapcho, Johy, 3,809,720.
Price, George McNair: *See—*
Moore, Lewis Frank; and Price, George McNair, 3,809,062.
Pro-Lect, Inc.: *See—*
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Procter & Gamble Company, The: *See—*
Anderson, John Alfred, 3,809,098.
Liepa, Alexander L., 3,808,962.
Spence, Thomas William Matches, 3,809,646.
Ulrich, Donald Aloysious, Jr., 3,809,088.
Yetter, Jerry Joseph, 3,809,711.
Yetter, Jerry Joseph, 3,809,712.
Produits Findus S.A.: *See—*
Akesson, Yngve Reinhold, 3,809,209.
Prohofsky, Leroy A., to Sperry Rand Corporation. Volatile memory protection. 3,810,116, Cl. 340-172.500.
Proni, Antonio: *See—*
Roggero, Arnaldo; Mazzei, Alessandro; and Proni, Antonio, 3,809,684.
Prutton Corporation: *See—*
Matej, Ronald J., 3,808,623.
Pryce, William; and Foster, Eric, to Northern Electric Company, Limited. Slitting of an electrically charged tape. 3,808,919, Cl. 83-7.000.
Pryde, Carolie Anne: *See—*
Chandross, Edwin Arthur; Pryde, Carolie Anne; Tomlinson, Walter John, III; and Weber, Heinz Paul, 3,809,732.
Ptacek, Matha C. Wiglet holder. 3,809,383, Cl. 269-91.000.
Puccini, Sergio E.: *See—*
Eddy, John W.; and Puccini, Sergio E., 3,809,822.
Pucher, Walter, to Allmanna Svenska Elektriska Aktiebolaget. Circuit interrupting means for high-voltage direct current. 3,809,959, Cl. 317-11.00e.
Puckette, Charles McD.: *See—*
Butler, Walter J.; and Puckette, Charles McD., 3,810,126.
Pulsifer, Verne, to Copper Range Company. Continuous casting die with compatible lining and jacket. 3,809,148, Cl. 164-283.00m.
Purdy, Chester A. Liquid proportioning system. 3,809,291, Cl. 222-145.000.
Purex Corporation, Ltd.: *See—*
Brett, James E., 3,809,247.
Purr, Gerhard: *See—*
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Putman, Richard E., to Westinghouse Electric Corporation. Computer control system for refining and hydrogenation of unsaturated hydrocarbons. 3,809,621, Cl. 202-205.000.
Pye Limited: *See—*
Rhodes, John George Laycock, 3,809,826.
Pyne, William R.: *See—*
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Pyrz, Edmund J.: *See—*
Bush, John W.; and Pyrz, Edmund J., 3,809,756.
Quigley, Peter J. C. Board for a board game. 3,809,407, Cl. 273-134.00g.
Quillet, Gerard: *See—*
Bruhlet, Paul; and Quillet, Gerard, 3,809,524.
Raber, John Wayne. Incinerator. 3,808,985, Cl. 110-3.000.
Rabow, Jack Jacob: *See—*
Avon, Eric Joseph; and Rabow, Jack Jacob, 3,808,827.
Radzhabov, Nadir Asker Ogly. Flat direct-flow gate valve. 3,809,360, Cl. 251-196.000.
Raffinerie tirlemontoise: *See—*
Duchateau, Georges F., 3,809,538.
Ragard, Phillip A., to Universal Instruments Corporation. Automatic component process system. 3,808,662, Cl. 29-203.00b.
Rahn, Oskar: *See—*
Koch, Friedrich-Karl; and Rahn, Oskar, 3,809,255.
Rainer, Norman B. Stable vinyl chloride polymer structures and method of producing them. 3,809,669, Cl. 260-2.50r.
Raitt, Edward D. Loading process for ice cream carrier strip. 3,809,774, Cl. 426-393.000.
Rakaska, Bertha R., 20% to Lee, Raymond, Organizations, Inc., The. Tissue paper roll container and dispenser. 3,809,448, Cl. 312-39.000.
Ramsey Corporation: *See—*
Prasse, Herbert F.; and McCormick, Harold E., 3,809,546.
Rana, Victoriano F., to Harris-Intertype Corporation. Method and apparatus for off-line make-ready. 3,809,385, Cl. 270-54.000.
Randall, Alan C., to Sea Harvest, Inc. Sea harvesting apparatus and method. 3,808,779, Cl. 56-9.000.
Randall, John Justin: *See—*
Polevy, John Henry; and Randall, John Justin, 3,809,730.
Randolph, Richard L.: *See—*
Schaad, Howard A.; and Randolph, Richard L., 3,809,825.
Raper, Hubert L.: *See—*
White, Stanley A.; and Raper, Hubert L., 3,810,182.
Rapport, Henry, to University of California, The Regents of the. Certain 5,6-dioxopyrrole [2,1-b] thiazoles. 3,809,700, Cl. 260-306.700.
Ratcliff Industries, Inc.: *See—*
Ratcliff, Rudy J., 3,809,426.
Ratcliff, Rudy J., to Ratcliff Industries, Inc. Mechanism for raising and lowering telescopic travel trailer. 3,809,426, Cl. 296-27.000.
Ratcliffe, Robert E. G.: *See—*
Kilgore, Lee A.; Ratcliffe, Robert E. G.; Smith, Henry L.; and Strait, Bernard S., Jr., 3,809,914.
Ratte, Wilfred L., Jr., to Water Gremlin Company. Attachments for fishing lines. 3,808,728, Cl. 43-44.910.
Rauland-Borg Corporation: *See—*
Dahlquist, James E.; and Medal, Richard J., 3,809,824.
Rautiola, Norman A.: *See—*
Miller, Gerald K.; and Rautiola, Norman A., 3,809,833.
Miller, Gerlad K.; and Rautiola, Norman A., 3,810,149.
Rawson, Donald E.; Greene, Norman D.; and Hoylman, H. Wayne. Heat flow transducer for thermal surveys. 3,808,889, Cl. 73-341.000.
Raymond, Edwin Stanley. Flanging device. 3,808,869, Cl. 72-409.000.
Raymond, Jan Wayne; and Whetstone, Clay N. Method for making products suitable for use in forming composite superconductors. 3,809,147, Cl. 164-122.000.
Raytheon Company: *See—*
Hertz, Daniel, 3,809,925.
RCA Corporation: *See—*
Crowley, Lee Francis; Presky, Dennis Robert; and Missenda, Andrew Michael, 3,810,023.

Duffy, Michael Thomas; and Carnes, James Edward, 3,809,574.
Gange, Robert Allen; and Steinmetz, Carl Charles, 3,809,974.
Gardiner, Arthur Noel; and Stern, Herman Abraham, 3,808,769.
Heuner, Robert Charles; and Niemiec, Stanley Joseph, 3,809,458.
Young, Alexander Wilson, 3,809,926.

Reber, Raudi: *See—*
Scholz, Joachim; and Reber, Raudi, 3,810,066.

Redemann, James W. Cassette-slide synchronizer. 3,809,364, Cl. 353-15.000.

Redman, Robert Frederick, to Rolls-Royce (1971) Limited. Vane or blade for a gas turbine engine. 3,809,494, Cl. 416-97.000.

Redmore, Derek, to Petrolite Corporation. Dihydrophenanthridine phosphonates. 3,809,694, Cl. 260-286.00a.

Reed, Joseph; and De Lorenzo, Joseph F., to Litton Systems, Inc. Communication system utilizing frequency division multiplexing to link a plurality of stations each containing a switchable synthesizer. 3,809,815, Cl. 179-15.0fd.

Reed, Joseph; Shapiro, Jonas M.; Iliakidis, Athanassious; and Apostolakis, Anthony, to Litton Systems, Inc. Communication system utilizing frequency division multiplexing and a frequency plan therefor. 3,809,816, Cl. 179-15.0fd.

Reehil, Edward G.: *See—*
Post, Donald S.; and Reehil, Edward G., 3,809,475.

Reeves, Robert Sims. Cup-mouthpiece with divisible shank. 3,808,935, Cl. 84-399.000.

Rehman, Warren C.: *See—*
Rivkowich, Harold; Rehman, Warren C.; Knapp, William; and Borders, Bert, 3,809,769.

Reid, Laurie M., to Master Packaging Equipment, Inc. Method of and apparatus for shrink packaging. 3,808,767, Cl. 53-30.000.

Reid, Robert E.: *See—*
Crawford, Wheeler C.; Godfrey, Arthur W.; and Reid, Robert E., 3,809,651.

Reid, Walter L., Jr.: *See—*
Tirrell, C. Barry; and Reid, Walter L., Jr., 3,809,966.

Reinertsen, Tormod K.: *See—*
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Reinhard, Donald L., to General Electric Company. Flame retardant thermoplastic compositions. 3,809,729, Cl. 260-874.000.

Reinhard, Florence. Toe protecting bed clothing rail. 3,808,614, Cl. 5-319.000.

Reisman, Jack L. Lens processing apparatus'. 3,809,238, Cl. 209-83.000.

Reissinger, Gottfried; and Reissinger, Harro, said Harro assor. to said Gottfried. Double bladed snowplow with overload release. 3,808,714, Cl. 37-42.0vl.

Reissinger, Harro: *See—*
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Reist, Walter, to Fehr & Reist AG. Turning conveyor for flat structures, especially printed products. 3,809,214, Cl. 198-33.0ab.

Reiswig, Robert D.: *See—*
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Reliance Time Controls, Inc.: *See—*
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Relyea, Vincent L., Jr.: *See—*
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Reminton Arms Company, Inc.: *See—*
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Remy, E. P., et Cie: *See—*
Berry, Jean-Luc, 3,809,768.

Renner, Hermann; and Sacco, Bruno, to Daimler-Benz Aktiengesellschaft. Vehicle door, especially for passenger motor vehicles. 3,808,743, Cl. 49-502.000.

Renzo, Peter C., to Creative Logic Corporation. Optical scanner. 3,809,894, Cl. 250-236.000.

Research Corporation: *See—*
Vieth, Wolf R.; Wang, Shaw S.; Gilbert, Seymour G.; and Venkatasubramanian, Kalyanasundram, 3,809,613.

Reserach Laboratories of Australia Pty. Limited: *See—*
Marley, Brian George, 3,809,555.

Retzer, Kenneth W.: *See—*
Meyer, Charles F.; and Retzer, Kenneth W., 3,809,958.

Revord, Orville J. Gypsum-based building product and method of producing same. 3,809,566, Cl. 106-110.000.

Rexroth, G. L., GmbH: *See—*
Knaak, Hans, 3,808,952.

Reyhing, Jorg; and Rohde, Wilhelm, to Linde Aktiengesellschaft. Process and apparatus for the adsorptive purification of gases. 3,808,773, Cl. 55-31.000.

Reynolds, Keith R.: *See—*
Edson, Gwynne I.; and Reynolds, Keith R., 3,809,628.

Rheinische Werkzeug- und Maschinenfabrik GmbH: *See—*
Zarth, Karl-Heinz, 3,809,979.

Rheinstahl Aktiengesellschaft, Firma: *See—*
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Rheinstahl Eggers-Kehrhahn GmbH: *See—*
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Rheintechnik Weiland & Kaspar OHG: *See—*
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Rhodes, John George Laycock, to Pye Limited. Punched card reading telephone instrument. 3,809,826, Cl. 179-90.0cs.

Rhodes, Robert L., to Mueller Co. Gate valve stem thrust collar lubrication. 3,809,363, Cl. 251-355.000.

Rhone-Poulenc S.A.: *See—*
Niogret, Gilbert, 3,809,246.

Rhone-Progil: *See—*
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Ricci, David W., to Hewlett-Packard Company. Data transfer control apparatus. 3,810,103, Cl. 340-172.500.

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Rich, Barry S.: *See—*
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Richards, Willie J.: *See—*
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Richardson-Merrell Inc.: *See—*
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Richmond, Henry, to American Cyanamid Company. Bis(alkylsulfonyl)vinylbenzenes as UV-absorbers in polymers. 3,809,674, Cl. 260-45.90r.

Richmond, William J.: *See—*
Krock, Richard H.; and Richmond, William J., 3,808,671.

Richner, Hans, to Hatebur, F. B., AG. Device for the lateral adjustment and adjustment in height of the ram bearer on presses for noncutting metal shaping. 3,808,871, Cl. 72-447.000.

Rico, Luis Edgar. Button for electrical switch or the like. 3,809,841, Cl. 200-329.000.

Riegel Textile Corporation: *See—*
Estes, Phillip Waite, 3,809,604.

Rigney, Jack C.; Hollis, Samuel H.; and Doonan, Nathaniel J., to Thursday Company, The. Disposable insert for litter box. 3,809,013, Cl. 119-1.000.

Ring, Charles E.: *See—*
Bond, Herbert M.; and Ring, Charles E., 3,809,642.

Rininger, Paul R., to Global Marine Inc. Submerged chain angle measurement. 3,810,081, Cl. 340-3.00r.

Risman, Per Olov G.; and Rosengren, Lars O., to Husqvarna Vapenfabriks Aktiebolag. Microwave heating apparatus. 3,810,248, Cl. 219-10.550.

Rivkowich, Harold; Rehman, Warren C.; Knapp, William; and Borders, Bert, to Tetley Inc. Method of extracting tea. 3,809,769, Cl. 426-312.000.

Robbins Company, The: *See—*
Porter, Wilson B.; and Klein, Harold T. (said Klein assor. to), 3,808,916.

Robbins, James S., and Assoicates, Inc.: *See—*
Porter, Wilson B.; and Klein, Harold T. (said Porter assor. to), 3,808,916.

Robertshaw Controls Company: *See—*
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Robinson, Fran: *See—*
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Robinson, Keith, to Dowty Fuel Systems Limited. Fuel systems for aircraft gas turbine engines. 3,808,797, Cl. 60-39.28r.

Robinson, William m.: *See—*
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Rocher, George, to Metallurgical Exoproducts Corporation. Hot top maintaining system for an ingot mold. 3,809,355, Cl. 249-106.000.

Rocher, George; and Vayda, Pierre Andre, to Metallurgical Exoproducts Corporation. Apparatus for ladle additions. 3,809,380, Cl. 266-34.00t.

Rockwell International Corporation: *See—*
Bonds, James Vaull; and McCaskill, John Walton, 3,809,158.

Rodler, Waldo E., Jr. Propulsion system. 3,809,005, Cl. 115-12.00r.

Roeder, George; and Schmidt, Claus, to Messer Griesheim GmbH. Machine for maintaining constant the distance of a cutting or welding torch from the work piece. 3,809,308, Cl. 228-9.000.

Roeder, Neil M., to Zenith Radio Corporation. Shadow mask for color cathode ray tube and method of manufacture thereof. 3,809,945, Cl. 313-85.00s.

Roehrig, John A. Screw head. 3,808,937, Cl. 85-45.000.

Rogers, Frank J.; and Mac Close, Joe, to Rogers Sales & Service, Inc. Process for manufacture of a plastic conduit connector component. 3,809,737, Cl. 264-154.000.

Rogers, Philip A., to AMF Incorporated. Ultrasonic wall thickness measurement. 3,808,879, Cl. 73-67.900.

Rogers Sales & Service, Inc.: *See—*
Rogers, Frank J.; and Mac Close, Joe, 3,809,737.

Roggero, Arnaldo; Mazzei, Alessandro; and Proni, Antonio, to Snam Progetti, S.p.A. Process for the production of homopolymers and copolymers of episulphides and product thereof. 3,809,684, Cl. 260-79.000.

Rogov, Iosif Alexandrovich: *See—*
Levin, Igor Anatolievich; Levin, Anatoly Yakovlevich; Fedorov, Nikolai Evstigneevich; Rogov, Iosif Alexandrovich; Afanasov, Erik Eduardovich; and Turyansky, Eduard Grigorievich, 3,809,341.

Rohan, George Alexander, to Kappa Holding A.G. Polychloroprene rubbers. 3,809,567, Cl. 106-306.000.

Rohde, Wilhelm: *See—*

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Rohe, A.: *See—*
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Rolland, Albert, S.A.: *See—*
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Rolls-Royce (1971), Limited: *See—*
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Redman, Robert Frederick, 3,809,494.
Scott-Scott, John Lanfear, 3,808,804.
Rosberg, Frantisek; Linda, Josef; Buzga, Ondrej; Dusek, Miloslav; and Cvetler, Jiri, to Tos Hostivar, narodni podnik. Safety guards for grinding wheels. 3,808,749, Cl. 51-269.000.
Rose, Daniel G. Helmet with quick release means for storing goggles thereon. 3,808,604, Cl. 2-10.000.
Rose, Frederick A.: *See—*
Carpentier, John H.; and Rose, Frederick A., 3,808,613.
Rose, William Henry: *See—*
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Rosemount Engineering Company Limited: *See—*
Harris, Edward Paul, 3,810,012.
Johnston, James Stewart; and Fellow, David Frank, 3,810,151.
Rosen, Harold A.: *See—*
Andrews, George J.; and Rosen, Harold A., 3,809,337.
Rosenbaum, Della S. Apparatus for making fringe. 3,808,990, Cl. 112-9.000.
Rosengren, Lars O.: *See—*
Risman, Per Olov G.; and Rosengren, Lars O., 3,810,248.
Rosenthal, Jerome A., to Xerox Corporation. Electronic display device. 3,810,165, Cl. 340-324.00a.
Ross, Andrew. Combination vanity case. 3,809,102, Cl. 132-82.00r.
Roth, Stephen A., to Tektronix, Inc. Duty factor correction circuit. 3,810,026, Cl. 328-127.000.
Rothfuss, Robert G.; and Park, Lester D., to Senco Products, Inc. Remote valve for pneumatic tool. 3,808,620, Cl. 91-308.000.
Roto-Finish Company: *See—*
Balz, Gunther W.; and Leipold, Forrest P., 3,808,744.
Rouge, Serge; and Lebra, Jacques. Mechanical moving structure for an X-ray apparatus. 3,808,898, Cl. 74-86.000.
Routson, Willis G., to Dow Chemical Company, The. Method for selectively controlling flow of aqueous fluids in subterranean formations. 3,809,160, Cl. 166-294.000.
Royalty S.A.: *See—*
See, Jacques Leon Alexandre, 3,809,391.
Ruell, Hartwig; and Storck, Eckhard, to Siemens Aktiengesellschaft. Reduced positional sensitivity for holograms of electrical signals. 3,809,453, Cl. 350-3.500.
Rumble, Carl V.: *See—*
United States of America, National Aeronautics and Space Administration, 3,809,800.
Rundberg, Sten I., to Lee, Raymond, Organization, Inc., The. Flashlight unit. 3,809,321, Cl. 240-10.630.
Russell, Ben C., to Stanley Fixture Manufacturing Company, Incorporated. Saw guard. 3,808,932, Cl. 83-478.000.
Russell, James T., to United States of America, Interior. Measuring apparatus for spatially modulated reflected beams. 3,809,477, Cl. 356-5.000.
Russell, Theodore B. Closure device for dispensing tubes. 3,809,300, Cl. 222-545.000.
Ruti Machinery Works Ltd.: *See—*
Strauss, Edgar; and Karcher, Charles, 3,809,130.
Ruti Machinery Works Ltd.; formerly Casper Honegger Ruti: *See—*
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Ruttan, Thomas G., to Varian Associates. Push-pull transferred-electron device circuit. 3,810,045, Cl. 331-96.000.
Ryffin-Hughes, John Malcolm; Harding, Brian; and Lake, Graham Albert John. Heating apparatus. 3,809,052, Cl. 126-116.00r.
S&M Enterprises Inc.: *See—*
McWilliams, Larry L., 3,808,782.
Saab-Scania Aktiebolag: *See—*
Aslund, Nils Robert Dahr; Pettersson, Sven-Olof; and Angelstrand, Sten Borje, 3,809,482.
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Sacco, Bruno: *See—*
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Saco-Lowell Corporation: *See—*
Preston, Frederick A.; Tarbox, Philip B.; and Anderson, Gordon C., 3,808,790.
Saenger, John F., Jr., to Union Carbide Corporation. Plasma arc power system for welding. 3,809,850, Cl. 219-121.00p.
Sahara, Masayoshi: *See—*
Nanba, Yasuhiro; and Sahara, Masayoshi, 3,810,208.
Sahasrabudhe, Arun P., to Westinghouse Electric Corporation. Apparatus for receiving a frequency and phase coded vehicle control signal. 3,810,161, Cl. 340-170.000.
Sainsbury-Carter, John B.: *See—*
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Saint-Gobain Carnaud Interplastic: *See—*
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Saint-Gobain Industries: *See—*
Kunert, Heinz; Moebs, Heinz; and Sauer, Gerd, 3,810,180.
Sair, Louis; and Melcer, Irving, to Griffith Laboratories, Inc., The. Methods of making vegetable protein concentrates. 3,809,767, Cl. 426-364.000.
Saito, Kaneo, to Konishiroku Photo Industry Co., Ltd. Camera finder. 3,809,890, Cl. 250-214.00p.
Sakaguchi, Keiichi; and Hirata, Noritsugu, to Cannon Kabushiki Kaisha. Plotographic camera having an automatic exposure element setting. 3,810,200, Cl. 354-21.000.
Sakaguchi, Keiichi; Someya, Atsushi; and Hirata, Noritsugu, to Canon Kabushiki Kaisha. Exposure control device. 3,810,206, Cl. 354-41.000.
Sakamoto, Iwao: *See—*
Shibata, Katsuhiko; Seika, Yajuro; Sakamoto, Iwao; Yamada, Kango; and Kondo, Setsuo, 3,808,631.
Sakura Seiki Kabushiki Kaisha: *See—*
Takahashi, Kikuo, 3,809,008.
Salerni, Paul L. Cargo loading and carrying device. 3,809,266, Cl. 214-450.000.
Salet, Simone; and De Montgolfier, Arnaud, to G.I.T.A.C. System for the automatic reading of curves. 3,809,909, Cl. 250-556.000.
Salvi, Enrico, to United States of America, Navy. Anticarbon device for the scroll fuel carburetor. 3,808,803, Cl. 60-39.74r.
Salzer, Erwin, to Chase-Shawmut Company, The. High-voltage fuse. 3,810,061, Cl. 337-159.000.
Salzer, Erwin, to Chase-Shawmut Company, The. Fuse holders. 3,810,077, Cl. 339-219.00f.
Sampey, Harry R., to Pentron Industries, Inc. Distance event marker. 3,809,864, Cl. 235-93.0dn.
Sampson, Robert W.: *See—*
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Sand, Norma; and Sand, Per. Captive dispenser cap. 3,809,299, Cl. 222-521.000.
Sand, Per: *See—*
Sand, Norma; and Sand, Per, 3,809,299.
Sanders, James F., to Minnesota Mining and Manufacturing Company. Electrically conductive fuser blanket. 3,809,854, Cl. 219-216.000.
Sandiford, Denis James Henry; and Smith, Alan George, to Imperial Chemical Industries Limited. Production of double layer laminates. 3,809,733, Cl. 264-45.000.
Sandvik Aktiebolag: *See—*
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Sankyo Kogaku Kogyo Kabushiki Kaisha: *See—*
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Sanner, George E., to Santron Corporation. Fluid flow control systems. 3,809,116, Cl. 137-391.000.
Sansing, James Earl; and Novotny, Joseph, to Allied Chemical Corporation. Inhibition of corrosive action of fire retardants containing aqueous ammoniated superphosphoric acid on aluminum. 3,809,653, Cl. 252-148.000.
Santhony, Edward J. Siding, joint and end hand break. 3,808,873, Cl. 72-479.000.
Santilli, Ruggero. Sprocket driven annular saw. 3,808,685, Cl. 30-389.000.
Santron Corporation: *See—*
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S.A.R.L. Etud: *See—*
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Sarukhanian, Georg: *See—*
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Sarvis Oy: *See—*
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Sasakura Engineering Co., Ltd.: *See—*
Sasakura, Tetsugoro; and Kurosaka, Takashi, 3,809,623.
Sasakura, Tetsugoro; and Kurosaka, Takashi, to Sasakura Engineering Co., Ltd. Evaporating method and evaporating apparatus. 3,809,623, Cl. 203-11.000.
Sasse, Klaus; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. Certain aryl-dioxazoles used as fungicides. 3,809,763, Cl. 424-272.000.
Sata, Toshio. Method and means for detecting the clogging of a grinding wheel or the like. 3,810,002, Cl. 324-34.00r.
Sato, Hideo; and Sugaya, Yoshiharu, to Asahi Kasei Kogyo Kabushiki Kaisha. Crosslinked acrylonitrile polymer fibers. 3,809,685, Cl. 260-80.710.
Sato, Naotake: *See—*
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Sato, Shui: *See—*
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Satomoto, Atsushi: *See—*
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Saucier, Len, 20% to Lee, Raymond, Organization, Inc. Speedometer locking device. 3,808,894, Cl. 73-491.000.
Sauer, Gerd: *See—*
Kunert, Heinz; Moebs, Heinz; and Sauer, Gerd, 3,810,180.
Sauer, Joseph, to Bosch, Robert, G.m.b.H. Gear shifting assembly for change speed transmissions. 3,808,903, Cl. 74-335.000.

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Savall, Vincent, to Degrement, Societe Generale d'Epuration & d'Assainissement. Method of injecting fluids into a flotation tank. 3,809,240, Cl. 210-44.000.
Savio, Luciano, to Officine Savio S.p.A. Device for withdrawing and positioning cops and bobbins in bulk. 3,809,213, Cl. 198-33.0aa.
Sayles, Francis S., to Mobil Oil Corporation. High dropping point complex grease. 3,809,650, Cl. 252-42.000.
Scandia Packaging Machinery Company: *See*—
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Schaad, Howard A.; and Randolph, Richard L., 33 1/3% to Foley, William J. Receiver for inductive communication system. 3,809,825, Cl. 179-82.000.
Schachet, Eli; and Deuschle, Fritz, to Sherwood Medical Industries Inc. Wound drainage device. 3,809,086, Cl. 128-278.000.
Schadlich, Gunther: *See*—
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Schaefer, Hans F., Jr., to USM Corporation. Apparatus for forming normal stitches. 3,808,991, Cl. 112-121.120.
Schantz, Ronald K., to Westinghouse Air Brake Company. Fluid control system for floor and ejector gates of each bowel scrapers. 3,808,717, Cl. 37-124.000.
Schechter, Harold: *See*—
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Scheidel, Wolfgang; and Steinmann, Helmut, to Bosch, Robert, G.m.b.H. Air heating and cooling system for a vehicle passenger compartment. 3,809,151, Cl. 165-42.000.
Schelle, Axel, to Know-Bremse KG. Spring element particularly adapted for automatic center head couples of railroad vehicles. 3,809,252, Cl. 213-24.000.
Scherer, Craig J.: *See*—
Muir, Gregory A.; and Scherer, Craig J., 3,810,097.
Scherzer, Walter Oscar: *See*—
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Schibilla, Eduard: *See*—
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Schillreff, George H.; Grayson, Lawrence E.; and Carter, William M., to General Dynamics Corporation. Portable decoy launcher system and rounds therefor. 3,808,940, Cl. 89-1.00r.
Schimmerling, Michel Gerard. Device for the selection of documents such as, for instance, index cards. 3,809,237, Cl. 209-80.500.
Schindler, Hans: *See*—
Cobarg, Claus Christian; and Schindler, Hans, 3,808,741.
Schindler, Rudolf A., to United States of America, National Aeronautics and Space Administration. Single reflector interference spectrometer and drive system therefor. 3,809,481, Cl. 356-106.00s.
Schlicker, Volker; and Wrobel, Gunter, to Papst-Motoren KG, Ltd., Co. Fan construction. 3,809,503, Cl. 417-352.000.
Schlofhorst, W., & Co.: *See*—
Gebald, Gregor, 3,809,869.
Schlough, Thomas L., to Gran-A-Stone Co., The; Park Tool Company division. Apparatus for turning heavy loads such as stone. 3,809,422, Cl. 294-74.000.
Schmid, August; and Goens, Georges, to Serania AG Patentverwertungs- und Finanzierungsgesellschaft. Method and apparatus for automatic bowling pin setting. 3,809,398, Cl. 273-43.00a.
Schmid, August; and Goens, Georges, to Patentverwertungs- und Finanzierungsgesellschaft Serania AG. Bowling pin sweeping and clearing mechanism. 3,809,400, Cl. 273-54.00a.
Schmidt, Claus: *See*—
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Schmit, Justin M., to Arctic Pac, Inc. Liquid containing and dispensing device. 3,809,290, Cl. 222-88.000.
Schmitt, Edward Emil; Polistina, Rocco Albert; and Forgione, Peter Salvatore, to American Cyanamid Company. Fibrous mats and sheets containing immobilized enzymes entrapped in their interstices. 3,809,605, Cl. 162-158.000.
Schmitt, Edward Emil; and Capozza, Richard Carl, to American Cyanamid Company. Detecting anti-cholinesterase materials. 3,809,616, Cl. 195-103.50r.
Schmitt, Edward Emil, to American Cyanamid Company. Device for detecting anticholinesterase materials. 3,809,617, Cl. 195-127.000.
Schmitt, Edward Emil; and Polistina, Rocco Albert, to American Cyanamid Company. Preparation of polymers. 3,809,683, Cl. 260-78.40n.
Schmoeger, Otto J., Jr.: *See*—
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Schmoyer, Arthur Robert. Instructional apparatus for displaying a changeable still sequence and incrementally advancing a pattern thereon. 3,808,705, Cl. 35-6.000.
Schneider, Gottfried; and Hauner, Friedrich, to Schubert & Salzer Maschinenfabrik Aktiengesellschaft. Can changing devices. 3,808,641, Cl. 19-159.00a.
Schneider, Helmut: *See*—
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Schneider, Herbert Anton, to Bell Telephone Laboratories, Incorporated. One-port complementary memory cell. 3,810,130, Cl. 340-173.00r.
Schneider, Robert F., to Synthetic Electronic Technology Co., Inc. Blow injection apparatus. 3,809,517, Cl. 425-242.00b.
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Lenz, Gunther; Krimm, Heinrich; and Schnell, Hermann, 3,809,679.
Schnoeller, Manfred: *See*—
Baumgartner, Werner; Keller, Wolfgang; and Schnoeller, Manfred, 3,809,846.
Schober, Helmut, to Sick, Erwin, Optik-Elektronik. Arrangement for hue evaluation. 3,809,892, Cl. 250-226.000.
Schoch, Robert, to Weinmann Aktiengesellschaft. Closure device for shoes, particularly for ski shoes. 3,808,644, Cl. 24-68.0sk.
Schockman, Robert L.: *See*—
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Scholz, Joachim; and Reber, Raudi, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Precision resistance for measuring purposes. 3,810,066, Cl. 338-25.000.
Schoppe, Wayne F.: *See*—
Nesta, Charles; Jackson, Earl V.; Hoesly, David D.; Schoppe, Wayne F.; Squassoni, Gino F.; and Warter, Peter J., 3,809,471.
Schoreder, Rondon L.: *See*—
Wiseman, Minor R.; and Schoreder, Rondon L., 3,810,007.
Schossow, George W. Vaporizer-humidifier. 3,809,374, Cl. 261-130.000.
Schott, Robert E.; and Longshore, Donald W., to Allis-Chalmers Corporation. Hydraulic modulating valve. 3,808,810, Cl. 60-416.000.
Schreiner, Hermann: *See*—
Bemsel, Walter; and Schreiner, Hermann, 3,810,086.
Schrock, Martin Omer; and Burkholder, Robert Flohr, to Black and Decker Manufacturing Company, The. Process of manufacturing an armature-piston sub-assembly. 3,808,676, Cl. 29-596.000.
Schubert & Salzer Maschinenfabrik Aktiengesellschaft: *See*—
Schneider, Gottfried; and Hauner, Friedrich, 3,808,641.
Schubert, Howard C., to Aerolite Electronics Corporation. Combination burglar alarm and fire alarm system. 3,810,171, Cl. 340-420.000.
Schuller, Reinhard; and Kopsch, Heinz, to Krauss-Maffer AG. Calender roll apparatus with device for controlling the thickness of the bank of material in front of the rolling gap. 3,809,907, Cl. 250-548.000.
Schultz, Everett M.; and Cragoe, Edward J., Jr., to Merck & Co., Inc. Substituted 2-aminomethyl-1-4,6-disubstituted phenols. 3,809,721, Cl. 260-570.900.
Schulz, Horst; Schwerdhofer, Hans-Joachim; and Look, Gunter, to Fichtel & Sachs AG. Multiple speed hub with coaster brake. 3,809,195, Cl. 192-6.00a.
Schurr, C. Allan, to Square D Company. Mounting bracket and locking means for electrical terminal block devices. 3,809,840, Cl. 200-321.000.
Schuy, Klaus Dieter; and Franzen, Jochen, to Varian Mat GmbH. Method for the mass spectrometric analysis of solids. 3,809,896, Cl. 250-286.000.
Schwartz, Reinhard: *See*—
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Schweier, Guenther: *See*—
Mueller-Tamm, Heinz; Urban, Friedrich; Frielingsdorf, Hans; Nickl, Johann; Schweier, Guenther; and Kohnle, Josef, 3,809,657.
Schweppe, Joseph L.; McMorris, Arthur H.; and Ahlgren, Erick L., to Houston Engineering Research Corporation. Random sequenced pneumatic multiplexing valve apparatus. 3,809,120, Cl. 137-607.000.
Schwerdhofer, Hans-Joachim: *See*—
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Scott, Allan W., to Varian Associates. Apparatus for increasing RF conversion efficiency of a traveling wave tube. 3,809,949, Cl. 315-3.500.
Scott, William, Jr.: *See*—
Drella, Charles L.; Fineo, Carlo; Jenssen, Lloyd W.; and Scott, William, Jr., 3,808,771.
Wahlers, James Ludwig; Terry, Rupert Douglas; Scott, William, Jr.; and Simmers, Charles Donald, 3,808,765.
Scott-Scott, John Lanfear, to Rolls-Royce (1971) Limited. Marine propulsion. 3,808,804, Cl. 60-221.000.
Scoville, John Tregay, to Gilbert & Barker Manufacturing Company. Computing system. 3,809,866, Cl. 235-151.340.
Scuderi, Vincent, to Van Blarcom Closures, Inc. Child proof closure for containers. 3,809,274, Cl. 215-9.000.
Sea Harvest, Inc.: *See*—
Randall, Alan C., 3,808,779.
See, Jacques Leon Alexandre, to Royalty S.A. Flexible structure for ski tracks and the like. 3,809,391, Cl. 272-56.5ss.
Seetoo, Winston R.; Weide, Roman K.; and Charland, Telesphore L., to Isotopes, Inc. Exothermic bonding of thermoelectric couples. 3,808,670, Cl. 29-473.100.
Seguela, Claude Jean-Marie: *See*—
Duthion, Louis; Coyotte, Claude Charles; Seguela, Claude Jean-Marie; Barthelemy, Gabriel; Cinquanta, Alain; and Drapeau, Yves, 3,809,372.
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Shibata, Katsuhiko; Seika, Yajuro; Sakamoto, Iwao; Yamada, Kango; and Kondo, Setsuo, 3,808,631.
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Sekella, Youston M., to Westinghouse Electric Corporation. Radiation detector of elongated length with electrode support assembly therefor. 3,809,940, Cl. 313-61.00r.
Seki, Tunekatu: *See*—
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Selectro-Micro Company Limited: *See*—
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Severinsson, Lars Mattis, to Svenska Aktiebolaget Bromsregulator. Device for passing compressed air at pressures varying in dependence upon forces transmitted through the device. 3,809,110, Cl. 137-116.500.
Seybold, Rolf: *See*—
Evertz, Egon; and Seybold, Rolf, 3,808,667.
Shapero, Wallace H.; and Cane, Albert, to Mattel, Inc. Molding compositions and method of molding. 3,809,661, Cl. 260-5.000.
Shapiro, Jonas M.: *See*—
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Andrezejak, Sigmund L.; Orehoski, Michael A.; Shapland, James T.; and Szumilas, Raymond S., 3,809,146.
Sharp, Donald J.; and Sutch, Richard D., to Western Electric Company, Incorporated. Anodized cermet film components and their manufacture. 3,809,627, Cl. 204-37.00r.
Shaw, Russell E., to Interlake, Inc. Disposable inflatable dunnage. 3,808,981, Cl. 105-369.0ba.
Sheffield, James R.: *See*—
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Shepard, Francis H., Jr., to Vogue Instrument Corporation. Magnetic keyboard encoding device. 3,810,167, Cl. 340-365.000.
Shepherd, William B., to Hayes-Albion Corporation. Rack for shipping and storing textile beams. 3,809,258, Cl. 214-10.50r.
Sherwood Medical Industries Inc.: *See*—
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Shibata, Katsuhiko; Seika, Yajuro; Sakamoto, Iwao; Yamada, Kango; and Kondo, Setsuo, to Mitsubishi Jukogyo Kabushiki Kaisha. Device for removing a sludge from a surface. 3,808,631, Cl. 15-321.000.
Shields, Walter A. Apparatus for advancing articles relative to filling and sealing devices. 3,809,208, Cl. 198-85.000.
Shimazaki, Yasumi: *See*—
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Shimizu, Takaetsu. Nail file. 3,809,101, Cl. 132-76.400.
Shimoda, Keitaro; Kobayashi, Yutaka,; and Sumi, Takehiko, to Japan Exlan Company, Limited. Production of acrylic composite fibers. 3,809,738, Cl. 264-168.000.
Shinozaki, Koji: *See*—
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Shirley, Howard E.; and Jensen, Jackie L., to Turbo Cycle Company, Inc. Mobile burning apparatus for agricultural use. 3,809,060, Cl. 126-271.20c.
Shoffner, Bruce M.: *See*—
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Shrader, David L. Method and apparatus for improving musical ability. 3,808,936, Cl. 84-471.000.
Shrader, Erwin F.: *See*—
Szalanczy, Andras; Shrader, Erwin F.; Shoffner, Bruce M.; and Chamberlain, James D., 3,809,901.
Shute, Andrew Alfred Thomas. Device for freeing a fouled anchor. 3,809,001, Cl. 114-206.00r.
Shute, Wallace B. Surgical instrument. 3,809,091, Cl. 128-303.000.
Shutov, Vladimir Ivanovich: *See*—
Dolgy, Andrei Emelyanovich; Balandin, Jury Mikhailovich; Shelepchikov, Viktor Vasilievich; and Shutov, Vladimir Ivanovich, 3,809,340.
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Sieben, Karl Heinrich; and Pieper, Wilhelm, to Gebr. Hilgeland. Shearing device in bolt, ball or roller presses for shearing off wire sections. 3,808,930, Cl. 83-379.000.
Siebers, Gunter; Prenzel, Karl; and Barthel, Hans. Means for performing gear changes in multi-ratio change-speed gear boxes. 3,808,738, Cl. 74-339.000.
Sieko Koki Kabushiki Kaisha: *See*—
Kitai, Kiyoshi; Onda, Eiichi; Koyama, Mitsuo; Nagaoka, Shinji; and Nakagawa, Tadashi, 3,810,224.
Nakagawa, Tadashi, 3,810,222.
Sieling, Walter R.; and Ziesse, Norman G. projectile with sting for reducing drag. 3,809,339, Cl. 244-3.300.
Siemens Aktiengesellschaft: *See*—
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Kristen, Reiner; and Liska, Manfred, 3,809,935.
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Pekau, Dietlind; and Kiemle, Horst, 3,809,455.
Ruell, Hartwig; and Storck, Eckhard, 3,809,453.
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Siemens Electrogerate GmbH: *See*—
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Sievenpiper, Frederic L., to Allied Chemical Corporation. Ethoxyethanol, glycol, water dye solution. 3,809,533, Cl. 8-93.000.
Sievenpiper, Frederick L.; and Bement, Elmore L., to Allied Chemical Corporation. Recirculation back to a solvent dye bath of an aqueously separated halohydrocarbon-alkylene glycol ether mixture with further halohydrocarbon removing water from the ether. 3809,536, Cl. 8-173.000.
Silbereisen, Dieter: *See*—
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Simmons, John Richard; and Westbury, Roy, to Lucas Aerospace Limited. Electro-hydraulic actuator arrangement. 3,808,947, Cl. 91-363.00a.
Simmons, Russell T., to General Electric Company. Oven temperature control. 3,809,862, Cl. 219-512.000.
Simoleit, Hartmut; and Schneider, Helmut, to Kali-Chemie Aktiengesellschaft. Process for recovering barium from barium sulfide leashing residures. 3,809,742, Cl. 423-155.000.
Simon, Hans. Angle type feedthrough cable clamp. 3,809,798, Cl. 174-59.000.
Sims, De Witt: *See*—
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Sjoberg, Sven; Fagerstad, Herlov; and Weng, August, to Allmanna Svenska Elektriska Aktiebolaget. Stator for a direct current machine. 3,809,938, Cl. 310-254.000.
SKF Industrial Trading & Development Company B.V.: *See*—
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SKF Industrial Trading and Development Company B.V.: *See*—
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Skinner, David L., to Beloit Corporation. Hopper with variable level hopper feed tube. 3,809,133, Cl. 141-198.000.
Sklover, Isadore T.: *See*—
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Slama, Karel: *See*—
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Slusher, Emmet G. Level sensitive switch. 3,809,842, Cl. 200-221.000.
Slusher, Meredith W.: *See*—
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Smales, Herbert, to BBA Group Limited. Clutch disc with removable friction pads. 3,809,200, Cl. 192-107.00c.
Smedley, William H.: *See*—

Gay, Derek J.; Smedley, William H.; Cohen, Aaron G.; Dworkin, Darryl R.; Nuttall, Michael W.; and Wilson, Nicol S., 3,808,732.
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Smith, Bart A.; Lass, James L.; and Venier, Dominic A., to General Electric Company. Nuclear fuel assembly with bypass coolant control. 3,809,610, Cl. 176-78.000.
Smith, Cantrell, to General Electric Company. Direct current voltage regulator. 3,809,999, Cl. 323-17.000.
Smith, Henry L.: *See—*
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Smith, Ian E.: *See—*
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Smith, John Allen. Audio-visual display apparatus. 3,808,720, Cl. 40-28.300.
Smith, Pryer C., Sr. Programming system. 3,809,812, Cl. 179-1.00b.
Smith, Roy B.; Sabo, Alex T.; and Kavick, Edward M., to Moore, Samuel, & Company. Metering valve and lubricating system provided therewith. 3,809,184, Cl. 184-7.00d.
Smith, Samuel W.: *See—*
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Smithfield Fibers, Inc.: *See—*
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Snam Progetti, S.p.A.: *See—*
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Roggero, Arnaldo; Mazzei, Alessandro; and Proni, Antonio, 3,809,684.
Snelling, Aubrey Francis. Smoke producers. 3,809,056, Cl. 126-59.500.
Snyder, Duane P. Rotary vane internal combustion engine. 3,809,026, Cl. 123-8.470.
Societe Alsacienne de Constructions Mecaniques de Mulhouse: *See—*
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Societe Anonyme des Usines Chausson: *See—*
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Someno, Kenji: *See—*
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Somerville, Alvis J.; and Yager, Edwin K., to General Dynamics Corporation. Method and apparatus for surveying the velocities of a flow field. 3,809,480, Cl. 356-103.000.
Someya, Atsushi: *See—*
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Sommer, Dieter: *See—*
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Sonderegger, Hans C., to Kistler Instrumente AG. Supervisory equipment for machine tools. 3,809,488, Cl. 408-6.000.
Sonotone Corporation, mesne: *See—*
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Southwire Company: *See—*
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Spears, Esten W., Jr., to General Motors Corporation. Fuel drain system. 3,808,796, Cl. 60-39.09f.
Spector, Sidney, to Hoffmann-La Roche, Inc. Tubocurarine antigens and antibodies specific therefor. 3,809,782, Cl. 260-121.000.
Spence, Thomas William Matches, to Procter & Gamble Company, The. Novel ammoniophenolate compounds. 3,809,646, Cl. 252-8.800.
Sperry Rand Corporation: *See—*
Grace, Martin L., 3,810,033.
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Miller, Chauncey S., 3,810,019.
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Spinella, S. Charles. Dental articulator trays. 3,808,689, Cl. 32-32.000.
Spinks, Chester I. Hydraulic drive apparatus. 3,808,813, Cl. 60-486.000.
Spiroll Corporation, Ltd.: *See—*
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Spisak, Steve, to TRW Inc. Welding tool. 3,809,849, Cl. 219-98.000.
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Springthorpe, Anthony John, to Bell Canada-Northern Electric Research Limited. Apparatus for growing of epitaxial layers. 3,809,010, Cl. 118-429.000.
Sprinkle, Leland W., to United States of America, Interior. Audio-visual presentation system. 3,809,467, Cl. 353-15.000.
Sprinter Pack AB: *See—*
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Sprowl, James A. Fast responding alternating current voltmeter having an output that is linear in decibels. 3,809,875, Cl. 235-197.000.
Spruce, David Gordon: *See—*
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Groth, Clarence N.; Hempel, James N.; Wieczorek, Robert A.; Meyer, Charles F.; and Cook, Robert G., 3,809,965.
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Yale, Harry L.; and Petigara, Ramesh B., 3,809,698.
St. John, John H.: *See—*
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Staamann, Otto, to Automatic Druckmaschinenfabrik. Web registration in an intermittantly fed rotary printing press. 3,808,971, Cl. 101-181.000.
Staar, Marcel Jules Helen. Dictating machine using a multi-track magnetic strip and having a phasing control means. 3,810,238, Cl. 360-88.000.
Stafford, John P., to Honeywell Information Systems, inc. Position scaler (shifter) for computer arithmetic unit. 3,810,115, Cl. 340-172.500.
Stage, Leo J.: *See—*
Kooi, Edward; Odynski, George; and Stage, Leo J., 3,809,603.
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Brown, William Keith; and Stanback, Harris I., 3,809,962.
Standard Motor Products, Inc.: *See—*
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Standard Oil Company: *See—*
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Standard Oil Company (Indiana): *See—*
Neil, Peter C., 3,808,927.
Stanley Fixture Manufacturing Company, Incorporated: *See—*
Russell, Ben C., 3,808,932.
Stanley, Robert Kenneth. Textile treatment method. 3,808,654, Cl. 28-72.140.
Stansbrey, John J., to National Cash Register Company, The. Method and apparatus for repairing a diagonal break in a paper web. 3,809,606, Cl. 162-194.000.
Staples Developments Limited: *See—*
Wheeler, Frederick Charles, 3,809,993.
Staranick, Steve; and Garrison, Jerome R. Retractable ladders. 3,809,181, Cl. 182-70.000.
Staudenrausch, Georg, to Handtmann, Albert, Metallgusswerk, Armaturen- und Fleischereimaschinenfabrik. Method and apparatus for regulating pumps. 3,809,500, Cl. 417-222.000.
Stauffer, Norman L., to Honeywell Inc. Multi-stylus through field recording head. 3,810,191, Cl. 346-74.0mc.
Stead, Jerry A.: *See—*
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Steam Engine Systems Corporation: *See—*
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Steffel, Horst, to Collmann GmbH & Co. Spezialmaschinenbau KG. Apparatus for the continuous, overall X-ray examination of a motor vehicle tire. 3,809,900, Cl. 250-321.000.
Stehle, Heinz, to Porsche, Dr.-Ing. H.c.F., K.G., Firma. Brake disk for disk brakes. 3,809,192, Cl. 188-218.0xl.

Stein, Karl-Ulrich, to Siemens Aktiengesellschaft. Intergrated circuit electrical capacitor, particularly as a storage element for semiconductor memories. 3,810,125, Cl. 340-173.0ca.
Steinmann, Helmut: *See*—
Scheidel, Wolfgang; and Steinmann, Helmut, 3,809,151.
Steinmetz, Carl Charles: *See*—
Gange, Robert Allen; and Steinmetz, Carl Charles, 3,809,974.
Steinmetz, Gunter; and Thiele, Kurt, to Deutsche Gold-und Silber-Scheideanstalt vormels Roessler. 2,6-Dichloro-3-nitro-pyridine. 3,809,695, Cl. 260-290.0hl.
Stene, Ronald M., to Buckbee-Mears Company. Electroplating on a truncated ball suitable for use in a typewriter. 3,809,626, Cl. 204-20.000.
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Suozzo, Leonard S. Mechanical shock and sway arrestor. 3,809,186, Cl. 188-1.00b.
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Taisne, Jean. Systems for measuring displacements. 3,809,895, Cl. 250-237.00g.
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Krewson, Neil N.; Tait, John B.; and Updike, Bruce M., 3,810,108.
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Tanaka, Harumi, to Minolta Camera Kabushiki Kaisha. Shutter release locking device for camera. 3,810,227, Cl. 354-253.000.
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Tos Hostivar, Narodni podnik: *See*—
Belohoubek, Bohuslav; and Linda, Josef, 3,808,745.
Rosberg, Frantisek; Linda, Josef; Buzga, Ondrej; Dusek, Miloslav; and Cvetler, Jiri, 3,808,749.

Toscano, Catherine M. Solution for treatment of hair and scalp. 3,809,747, Cl. 424-70.000.

Toscano, Esteban J.: *See*—
Castro, Rodolfo; and Toscano, Esteban J., 3,808,672.

Townley, Ray Clifford: *See*—
Hopkins, John Warren; Townley, Ray Clifford; and Zimmerman, Leonard, 3,810,235.

Toyo Enterprises Kabushiki Kaisha: *See*—
Kamiya, Nobuyoshi, 3,808,703.

Toyota Jidosha Kogyo Kabushiki Kaisha Toyota-shi, Nippondenso Co., Ltd.: *See*—
Wakamatsu, Hisato; and Endo, Kunio, 3,809,029.

Toytown Corporation: *See*—
Suzuki, Haruo, 3,808,734.

Tozzi, Vincenzo. Child teaching board game. 3,808,709, Cl. 35-35.00h.

Treder, John D.: *See*—
Dodd, Paul D.; Lynott, John J.; and Treder, John D., 3,809,263.

Tremblay, Alain: *See*—
Vadeboncoeur, Leo; and Tremblay, Alain, 3,808,900.

Trevithick, Tony, to Woodhead, Daniel, Inc. Contact tester. 3,808,874, Cl. 73-9.000.

Trola-Kunststoffer-Zeugnisse GmbH & Co.: *See*—
Lauterbach, Heinrich, 3,808,633.

Tronzo, Raymond G. Bone implant with porous exterior surface. 3,808,606, Cl. 3-1.000.

Trotz, Samuel I.: *See*—
Cianciolo, Alfred D.; Sabatine, Donald J.; and Trotz, Samuel I., 3,809,587.

Truelove, Edward L., Sr. Bleeding tool for hydraulic brake cylinder. 3,809,359, Cl. 251-148.000.

Truelove, James E.: *See*—
Hussain, Anwar; and Truelove, James E., 3,809,714.

Trutzschler & Co., Firma: *See*—
Trutzschler, Hermann, 3,809,440.

Trutzschler, Hermann, to Trutzschler & Co., Firma. Shaft for depositing fibre flock. 3,809,440, Cl. 302-59.000.

TRW Inc.: *See*—
Batista, Roy I., 3,809,309.
Spisak, Steve, 3,809,849.

Tschuggnal, Alfred F.: *See*—
Kaltenhauser, Ludwig A.; and Tschuggnal, Alfred F., 3,809,277.

Tsilibes, George N.: *See*—
Casperson, John H.; and Tsilibes, George N., 3,810,189.

Tucker, Charles M. Warning and distress signal device for a disabled vehicle. 3,810,092, Cl. 340-107.000.

Tuflok, Inc.: *See*—
Canfield, Russell, 3,809,418.

Tull, Herbert G., III: *See*—
Edwards, John W.; and Tull, Herbert G., III, 3,809,235.

Tull, Herbert G., III, to Hoerner Waldorf Corporation. Stripping apparatus. 3,808,965, Cl. 100-7.000.

Tunzini Ameliorair, Thermique, Aeraulique,: *See*—
Fabre, Pierre; Giroud-Garampon, Robert; Gondrand, Michel; and Grenoble, Fernand Raymond, 3,809,011.

Tuohey, Paul F.: *See*—
Gracia, Robert F.; Laughrey, Richard A.; and Tuohey, Paul F., 3,809,562.

Turbo Cycle Company, Inc.: *See*—
Shirley, Howard E.; and Jensen, Jackie I., 3,809,060.

Turner, Prescott K., to General Electric Company. Electric connector. 3,810,075, Cl. 339-105.000.

Turtschan, Alfons, to Ganzhorn U. Stirn Kommanditgesellschaft. Apparatus for forming and filling containers. 3,808,772, Cl. 53-141.000.

Turyansky, Eduard Grigorievich: *See*—
Levin, Igor Anatolievich; Levin, Anatoly Yakovlevich; Fedorov, Nikolai Evstigneevich; Rogov, Iosif Alexandrovich; Afanasov, Erik Eduardovich; and Turyansky, Eduard Grigorievich, 3,809,341.

Tyler, William E., III: *See*—
Horowitz, Hugh H.; and Tyler, William E., III, 3,809,726.

Tymann, Edward B.: *See*—
Huettner, Robert E.; and Tymann, Edward B., 3,810,120.

Tyszkiewicz, Stefan Eugene. Luggage trolleys. 3,809,202, Cl. 194-1.00r.
Uchida, Mitsuo: *See*—
Jinno, Sigeru; and Uchida, Mitsuo, 3,808,893.
Uchiyama, Ryoji, to Maruyama Mfg. Co., Ltd. Pump. 3,809,508, Cl. 417-511.000.
Uchiyama, Yasuji, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument. 3,809,791, Cl. 84-1.240.
Ucote Corporation, mesne: *See*—
Connett, Hugh H., 3,809,597.
Udluft, Klaus; Weigert, Wolfgang; Offermanns, Heribert; and Wagner, Hans, to Deutsche Golf-und Silbert-Scheideanstalt vormals Roessler. Process for the production of 1,1,2-triacetoxyethane. 3,809,716, Cl. 260-491.000.
Ueda, Hiroshi, to Minolta Camera Kabushiki Kaisha. Driving mechanism for the movable reflector in a single lens reflex camera. 3,810,216, Cl. 354-156.000.
Ueda, Shigeo: *See*—
Tateisi, Tamotu; Ueda, Shigeo; and Kuwabara, Masayoshi, 3,809,128.
Ueda, Toshio: *See*—
Yamazaki, Eiichi; Maruyama, Koichi; Ueda, Toshio; and Nakamura, Tomizo, 3,809,558.
Uke, Alan K.: *See*—
Good, Richard R.; and Uke, Alan K., 3,809,353.
Ulbing, Cynthia G.; and Corretore, Daniel A., Jr., to Eastman Kodak Company. Negative unfogged silver halide emulsion containing a sensitizing combination of a cyanine desensitizing dye and a supersensitizing compound. 3,809,561, Cl. 96-84.000.
Ullman, Jeffery David: *See*—
Aho, Alfred Vaino; and Ullman, Jeffery David, 3,810,112.
Ullrich, Martin: *See*—
Erdmenger, Rudolf; Ullrich, Martin; and Hederich, Manfred, 3,809,140.
Ulrich, Donald Aloysious, Jr., to Procter & Gamble Company, The. Hydrolytically unstable polyurethane catamenial devices. 3,809,088, Cl. 128-285.000.
Ultrasonic Systems, Inc.: *See*—
Balamuth, Lewis; Kuris, Arthur; and Karatjas, Manual, 3,809,977.
Ultronic Systems Corporation: *See*—
Morris, Floyd D.; and Rich, Barry S., 3,810,109.
Unarco Industries, Inc.: *See*—
Bertram, Leroy W.; Loomis, Russell M.; and Gaikowski, Michael D., 3,808,982.
Unger, John J.; Augustine, Robert J.; and Khaja, Farees U., to Sunbeam Corporation. Electric coffee percolator. 3,809,285, Cl. 220-94.00r.
Uniflo Systems Company: *See*—
Smoot, Charles H.; Kleven, Lowell A.; and Wirth, Gary J., 3,808,977.
Unifoam A.G.: *See*—
Blackwell, James Brian; Killen, Dennis; and Hodgson, Victor Francis, 3,809,512.
Union Camp Corporation: *See*—
Abrams, Andrew M., 3,808,737.
Burke, William R.; McCall, Frank S.; Clark, Kenneth G.; De Pass, Ernest T.; and Friend, William H., 3,809,593.
Union Carbide Corporation: *See*—
Berlat, Norman R., 3,809,571.
Boersma, Robert Paul; Mendicino, Frank Dominic; and Omietanski, George Michael, 3,809,713.
Bonnet, Frederick W., 3,809,375.
Kupcikevicius, Vytautas; and Myles, Michael Joseph, 3,808,638.
Manz, August Frederick, 3,809,853.
Marbach, Walter V.; Acton, Frank J.; Eichin, Harry P.; and Winokur, Louis I., 3,809,576.
Saenger, John F., Jr., 3,809,850.
Union Industrielle Blanzy-Ouest: *See*—
Montacie, Marcel, 3,809,432.
Unique Devices Engineering & Consulting Corporation: *See*—
Wetmore, Harold B., 3,809,882.
Uniroyal, Inc.: *See*—
Davenport, Richard Waldron, 3,809,725.
Unitaka Ltd.: *See*—
Kimura, Hiroshiro; Arimoto, Heiji; Nara, Hirohisa; Miyamatsu, Tsugio; and Kitajima, Mitsuo, 3,809,131.
United Aircraft Corporation: *See*—
Beurer, Robert John; and Jeffery, Philip Auriol Edgar, 3,809,334.
Harner, Kermit L., 3,809,490.
United Can Company: *See*—
Wolfe, Wayne F., 3,808,868.
United GAs Industries Limited: *See*—
McGowan, Eric, 3,810,249.
United Kingdom Atomic Energy Authority: *See*—
Chubb, John Norman; and Sinton, Ernest Kennedy, 3,809,948.
United Kingdom of Great Britain and Northern Ireland, Secretary of State for Trade and Industry in Her Britannic Majesty's Government of the: *See*—
Horsford, Anne; Lewison, George Richard Grant; and Paffett, James Arthur Haines, 3,809,000.
United States of America
Agriculture: *See*—
Barnes, Phillip C., Jr.; and Holaday, Charles E., 3,808,964.
Bookwalter, George N., 3,809,773.
Fanta, George F.; and Burr, Robert C., 3,809,664.
Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., 3,809,706.
Mustakas, Gus C., 3,809,771.
Pittman, Allen G.; and Wasley, William L., 3,809,783.
Atomic Energy Commission: *See*—
Gilpatrick, Louis O., 3,809,762.
Wewerka, Eugene M.; Imprescia, Richard J.; and Reiswig, Robert D., 3,809,565.
Woolsey, Charles C., Jr., 3,809,731.
Interior: *See*—
Russell, James T., 3,809,477.
Sprinkle, Leland W., 3,809,467.
Nationa Aeronautics and Space Administration; Administrator; with respect to an invention of:
Rumble, Carl V.; and Driscoll, Kendall L. Means for accommodating large overstrain in lead wires. 3,809,800, Cl. 174-70.00r.
National Aeronautics and Space Administration: *See*—
Howard, Wayne H.; Young, Donald R.; and Adachi, Richard R., 3,809,871.
Schindler, Rudolf A., 3,809,481.
National Aeronautics and Space Administration; Administrator; with respect to an invention of:
Sainsbury-Carter, John B. Bonded joint and method. 3,809,601, Cl. 161-116.000.
Navy: *See*—
Allen, Redfield W.; and Weckesser, Louis B., 3,808,833.
Briant, Bob B., 3,810,154.
Byram, George W., 3,809,876.
Cammack, Thomas A.; Donahue, William J.; and Gratton, Peter D., 3,808,972.
Cohen, Julius; Edelman, Seymour; and Vezzetti, Carol F., 3,809,920.
Gilbert, Lee N., 3,809,127.
Hunter, Earl K., 3,810,080.
Salvi, Enrico, 3,808,803.
Sullivan, Dean R., 3,809,820.
White, Richard M.; and Goyal, Ramesh Chandra, 3,809,931.
Zieve, Robert M.; Maginnis, Christopher L.; and Kleidermacher, Moishe, 3,810,119.
Navy, mesne: *See*—
Greenberg, Harold L., 3,809,585.
United States Steel Corporation: *See*—
Andrezejak, Sigmund L.; Orehoski, Michael A.; Shapland, James T.; and Szumilas, Raymond S., 3,809,146.
Prellwitz, Samuel B., 3,809,913.
Stephan, Raymond C., 3,809,381.
Sydor, Matthew, 3,809,162.
Unitika Ltd.: *See*—
Arimoto, Heiji; Goto, Tokujo; Amemiya, Kunio; and Seki, Tunekatu, 3,808,618.
Universal Feeders, Inc.: *See*—
Miksitz, Frank J., 3,809,286.
Universal Instruments Corporation: *See*—
Ragard, Phillip A., 3,808,662.
Universal Oil Products Company: *See*—
Hausler, Rudolf H.; and Sampson, Robert W., 3,810,009.
Universite de Sherbrooke: *See*—
Delisle, Jules; and Baillargeon, Victor, 3,809,811.
University of California, The Regents of the: *See*—
Rapport, Henry, 3,809,700.
Unland, Mark L.; and Barker, George E., to Monsanto Company. Process for treating automative exhaust. 3,809,743, Cl. 423-213.500.
Uno, Naoyuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Light-measuring method and structure for cameras. 3,810,202, Cl. 354-23.000.
Updike, Bruce M.: *See*—
Krewson, Neil N.; Tait, John B.; and Updike, Bruce M., 3,810,108.
Upjohn Company, The: *See*—
Kaugars, Girts, 3,809,703.
Upton, Ernest W., to General Motors Corporation. Fluid unit with auxiliary rotor. 3,808,809, Cl. 60-347.000.
Urban, Friedrich: *See*—
Mueller-Tamm, Heinz; Urban, Friedrich; Frielingsdorf, Hans; Nickl, Johann; Schweier, Guenther; and Kohnle, Josef, 3,809,657.
U.S. Industries, Inc.: *See*—
Van Huis, Robert L., 3,808,960.
U.S. Philips Corporation: *See*—
Barten, Piet Gerard Joseph, 3,810,196.
Boekkooi, Anton; and Westerveld, Willem, 3,809,942.
Esser, Leonard Jan Maria, 3,809,923.
Jongerius, Hermanus Maria; and Van der Wolk, Rein Willemse, 3,809,944.
Van Der Plaats, Petrie Johan, 3,810,032.
Van Doorn, Willem, 3,810,256.
Visser, Wim, 3,809,986.
USM Corporation: *See*—
Muhlbach, Anton; and Lauckhardt, Gerhard, 3,809,306.
Schaefer, Hans F., Jr., 3,808,991.
Usui, Setsuo, to Sony Corporation. Method of making a sandblast mask. 3,808,751, Cl. 51-312.000.

Utsumi, Yoshiharu; and Terui, Hideaki, to Hitachi, Ltd. Thermostatic system for nuclear gyromagnetic resonance spectroscopic permanent magnet apparatus. 3,810,254, Cl. 324-.50r.

Vadeboncoeur, Leo; and Tremblay, Alain, to Jarry Precision Limited. Drive sheave. 3,808,900, Cl. 74-230.17e.

Valmet Oy: *See—*
Peltonen, Lahja Arvid, 3,809,270.

Vamosi, Jozsef: *See—*
Giflo, Henrik; Enekes, Sandor; Zambo, Pal; Sziklavari, Janos; Farkas, Istvan; Ivan, Geza; Molnar, Jozsef; and Vamosi, Jozsef, 3,809,550.

Van Blarcom Closures, Inc.: *See—*
Scuderi, Vincent, 3,809,274.

Van der Lely, Ary: *See—*
Van der Lely, Cornelis; and Van der Lely, Ary, 3,809,166.

Van der Lely, Cornelis; and Van der Lely, Ary. Tine mountings. 3,809,166, Cl. 172-763.000.

Van Der Plaats, Petrie Johan, to U.S. Philips Corporation. Amplifier device with remote power supply. 3,810,032, Cl. 330-29.000.

Van der Wolk, Rein Willemse: *See—*
Jongerius, Hermanus Maria; and Van der Wolk, Rein Willemse, 3,809,944.

Van Doorn, Willem, to U.S. Philips Corporation. Transistor amplifier for broad-band information signals. 3,810,256, Cl. 330-28.000.

Van Doorne, Guy Camille, to Labofina S.A. Lubricating grease. 3,809,649, Cl. 252-33.200.

Van Doorselaer, Marcel Karel, to Agfa-Gevaert N.V. Radiographic colour material. 3,809,906, Cl. 250-472.000.

Van Dyk, Gerk Gerry: *See—*
Clarke, Robert L.; and Van Dyk, Gerk Gerry, 3,809,904.

Van Hattum en Blakevoort B.V.: *See—*
Verbeek, Adalbertus Raphael Maria, 3,808,716.

Van Huis, Robert L., to U.S. Industries, Inc. Adjustable air inlet. 3,808,960, Cl. 98-41.00r.

Vanderlugt, Thomas, Jr., to Brown Company. Hexagonal container for food products or the like. 3,809,310, Cl. 229-26.000.

Vanderveer, Donald A. Pollution-free incineration system. 3,808,619, Cl. 110-8.00c.

Varekamp, Willem, to Ingenieursbureau Rodehuis & Verloop N.V. Method and apparatus for cooling the flame of an industrial gas burner. 3,809,523, Cl. 431-4.000.

Vari-Light Corporation: *See—*
Strebel, Elwood L., 3,809,656.

Varian Associates: *See—*
Eallonardo, Charles M., 3,808,677.
Ernst, Richard Robert, 3,810,001.
Miram, George V.; and Mizuhara, Yosuke M., 3,809,939.
Miram, George V.; and Woolsey, Samuel W., 3,809,957.
Ruttan, Thomas G., 3,810,045.
Scott, Allan W., 3,809,949.
Ward, Curtis E., 3,810,028.

Varian Mat GmbH: *See—*
Schuy, Klaus Dieter; and Franzen, Jochen, 3,809,896.

Vayda, Pierre Andre: *See—*
Rocher, George; and Vayda, Pierre Andre, 3,809,380.

Velcro France: *See—*
Billarant, Patrick; Goubeau, Robert; and Langlois, Jacques, 3,808,648.

Velo-Bind, Inc.: *See—*
Buan, Danilo P., 3,808,933.

Velten & Pulver, Inc.: *See—*
Euverard, Maynard R., 3,809,207.

Venier, Dominic A.: *See—*
Smith, Bart A.; Lass, James L.; and Venier, Dominic A., 3,809,610.

Venkatasubramanian, Kalyanasundram: *See—*
Vieth, Wolf R.; Wang, Shaw S.; Gilbert, Seymour G.; and Venkatasubramanian, Kalyanasundram, 3,809,613.

Venuto, C. Joseph, to ESB Incorporated. Method for producing lead oxide containing antimony, lead oxide made by the method, and a storage battery electrode using the oxide. 3,809,579, Cl. 136-26.000.

Vepa AG: *See—*
Fleissner, Heinz, 3,808,846.

Verbeek, Adalbertus Raphael Maria, to Van Hattum en Blakevoort B.V. Dredge cutter head. 3,808,716, Cl. 37-67.000.

Vergara, Jose D.; Galvan, Ramon; and Leal, Fausto. Motor speed control. 3,810,253, Cl. 318-237.000.

Vesely, Dwayne G. Bicycle lock. 3,808,847, Cl. 70-18.000.

Vestra-Union, S.A.: *See—*
Heiler, Wolfgang; Muller, Rudolf; and Becker, Jean-Jacques, 3,808,993.

Vezzetti, Carol F.: *See—*
Cohen, Julius; Edelman, Seymour; and Vezzetti, Carol F., 3,809,920.

Vidovic, Nikola, to International Video Corporation. Technique for detecting long duration pulses from a train of short duration pulses. 3,809,809, Cl. 178-69.5tv.

Vieth, Wolf R.; Wang, Shaw S.; Gilbert, Seymour G.; and Venkatasubramanian, Kalyanasundram, to Research Corporation. Biocatalytic module. 3,809,613, Cl. 195-63.000.

Viglione, Giovanni, to Nuova San Giorgio S.p.A. Grasping device for doffing full bobbins and reloading empty tubes in a spinning frame. 3,808,788, Cl. 57-52.000.

Vignini, Walter R.; and Molloy, Martin, to Sonotone Corporation, mesne. Acoustic CROS hearing aid. 3,809,829, Cl. 179-107.00s.

Villalobos, Luis F.; Harano, Allen A.; and Breinlinger, Richard H., to Hughes Aircraft Company, mesne. System for generating orthogonal control signals to produce curvilinear motion. 3,809,868, Cl. 235-151.000.

Villani, Gerard J.: *See—*
Hluchan, Stephen E.; and Villani, Gerard J., 3,809,971.

Visser, Wim, to U.S. Philips Corporation. Positioning device. 3,809,986, Cl. 318-561.000.

Vital, Zoltan; and Orban, Jean, to Ponder & Best, Inc. Electronic photoflash. 3,809,951, Cl. 315-149.000.

Vitencz, Michael. Ice cube dispensing machine. 3,809,295, Cl. 222-183.000.

Vittoz, Eric Andre, to Centre Electronique Horloger, S.A. Temperature sensing device. 3,809,929, Cl. 307-310.000.

Vittoz, Eric Andre, to Centre Electronique Horloger S.A. Current comparing device. 3,810,006, Cl. 324-62.000.

Vogelfanger, Elliot A.; and Nathanson, Bennett, to Celanese Corporation. Polyamide-metal structure. 3,809,591, Cl. 156-151.000.

Vogelsberg, Dieter, to Siemens Aktiengesellschaft. Rotating intermediate storer for the twisting of strand elements for electrical cables. 3,808,787, Cl. 57-34.0at.

Voges, Jan: *See—*
Knappstein, Johannes; and Voges, Jan, 3,809,622.

Vogue Instrument Corporation: *See—*
Shepard, Francis H., Jr., 3,810,167.

Von Braunschweig, Georg, to Rheinstahl Aktiengesellschaft, Firma. Tractor-shovel with pivotal steering means. 3,809,176, Cl. 180-79.20b.

Von Kaenel, Walter: *See—*
Law, John M.; Stricker, Alfred A.; and Von Kaenel, Walter, 3,808,681.

Von Semel, Georg; and Schibilla, Eduard, to Friedrich Uhde GmbH. Process for the removal of nitric oxides from exhaust gases. 3,809,744, Cl. 423-235.000.

Voorhees, John E.; and Schockman, Robert L., to Minster Machine Company, The. Arrangement for dynamic balancing of a mechanical press, especially a high speed mechanical press. 3,808,912, Cl. 74-604.000.

Vore, Richard E. Emergency auxiliary circuit switch and lighting system. 3,809,917, Cl. 307-39.000.

Vulcan Plastics, Inc.: *See—*
Churan, Roy G., 3,809,284.

Vulcano, Vincent N., to Compu-Sort Systems, Inc. Apparatus for stripping covers from paperback books and the like. 3,808,931, Cl. 83-409.000.

Wachs, Marvin Richard; Berman, Arnold L.; and Mahle, Christoph E., to Communications Satellite Corporation. Frequency translation routing communications transponder. 3,810,255, Cl. 325.003.000.

Wackerbarth, Folkard; and Beck, Kurt-Gunther, to Otto, C., Dr., & Comp. G.m.b.H. Horizontal coke oven. 3,809,620, Cl. 202-139.000.

Wagle, William E.: *See—*
Godwin, George A.; and Wagle, William E., 3,809,831.

Wagner, Alfred; and Hesse, Juergen, to Swiss Aluminum Ltd. Method and apparatus for extrusion of workpieces. 3,808,865, Cl. 72-269.000.

Wagner Electric Corporation: *See—*
Machek, John A., 3,809,125.

Wagner, Hans: *See—*
Udluft, Klaus; Weigert, Wolfgang; Offermanns, Heribert; and Wagner, Hans, 3,809,716.

Wahlers, James Ludwig; Terry, Rupert Douglas; Scott, William, Jr.; and Simmers, Charles Donald, to Johns-Manville Corporation. Investing and reversing conveyor. 3,808,765, Cl. 53-21.0fw.

Wahlig, James William. Prophylactic enclosure for clinical thermometers during use. 3,809,229, Cl. 206-306.000.

Waite, Hal R. Incendiary composition including zinc-mischmetal alloy. 3,809,586, Cl. 149-19.910.

Wakamatsu, Hisato; and Endo, Kunio, to Toyota Jidosha Kogyo Kabushiki Kaisha Toyota-shi, Nippondenso Co., Ltd. Electric control apparatus for internal combustion engines. 3,809,029, Cl. 123-32.0ea.

Wakamiya, Shunichiro; and Itoh, Kiyoshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Antireflection coating for an inner surface of cemented lenses. 3,809,459, Cl. 350-164.000.

Wakefield, Lynn B., to Firestone Tire & Rubber Company, The. Resinous formaldehyde reaction product of vulcanized-scrap-rubber pyrolysis oil and its production. 3,809,680, Cl. 260-51.00r.

Walch, Leo M., Jr.: *See—*
Warrick, Edward C.; Walch, Leo M., Jr.; and Hammerle, Dennis R., 3,809,312.

Walker, Eugene J.; and Maier, Alfred E., to Westinghouse Electric Corporation. Circuit breaker trip and latch mechanism. 3,810,051, Cl. 335-167.000.

Walker, Peter, Jr., to Electro-Craft Corporation. Variable speed motor. 3,809,983, Cl. 318-340.000.

Walker, Robert; and Harris, William, to Columbia Broadcasting System Inc. Banding correction system for film recording apparatus. 3,809,806, Cl. 178-7.600.

Walker, Walter P.; Cobb, Douglas R.; and Cofer, Frank H., Jr., to Audichron Company, The. Multichannel access switching system. 3,809,810, Cl. 179-1.00b.

Wall, Donald E.: *See—*

Ersek, Robert A.; Wall, Donald E.; and Garity, Michael C., 3,809,072.

Walters, Russell W., to BMR Security Products Corporation. Locking handle assembly. 3,808,850, Cl. 70-215.000.

Wandel, Oscar A.; and Mullaney, Frank, to Eastener Corporation. Safety assembly for fastener driving tool. 3,809,307, Cl. 227-8.000.

Wang, Robert; and Pariel, Jean-Marie, to Societe Anonyme Heurtey. Flat-flame burner utilizing heavy liquid fuels. 3,809,525, Cl. 431-353.000.

Wang, Shaw S.: *See—*
Vieth, Wolf R.; Wang, Shaw S.; Gilbert, Seymour G.; and Venkatasubramanian, Kalyanasundram, 3,809,613.

Ward, Curtis E., to Varian Associates. Waveshaping circuit and devices using same. 3,810,028, Cl. 328-142.000.

Ward, Frederick A., to Wean United, Inc. Coil car track system. 3,808,978, Cl. 104-130.000.

Ward, Robert C., to Commercial Affiliates, Inc. Surface covering installation with means to reach covered access systems. 3,808,760, Cl. 52-221.000.

Ware Machine Works, Inc.: *See—*
Pilch, John S., 3,809,250.

Wareham, Richard R.; and Paglia, Richard, to Polaroid Corporation. Self-developing camera system. 3,810,211, Cl. 354-86.000.

Warner Electric Brake and Clutch Company: *See—*
Kuo, Benjamin C.; and Kordik, Kenneth S., 3,809,990.

Warnow, Detlef: *See—*
Breiling, Hans Georg; and Warnow, Detlef, 3,809,109.

Warrick, Edward C.; Walch, Leo M., Jr.; and Hammerle, Dennis R. Rockwell International Corporation Pushbutton tamper proof taximeter. 3,809,312, Cl. 235-30.00r.

Warter, Peter J.: *See—*
Nesta, Charles; Jackson, Earl V.; Hoesly, David D.; Schoppe, Wayne F.; Squassoni, Gino F.; and Warter, Peter J., 3,809,471.

Wasley, William L.: *See—*
Pittman, Allen G.; and Wasley, William L., 3,809,783.

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Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Alessi, Robert V. Shutter control circuit for a photographic camera. T922,009, 5–7–74, Cl. 354—31.

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TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF MAY, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

De Bell, Lawrence R.: *See*—
Price, David D., Jr., and De Bell. Re. 28,006.

Eaton Yale & Towne Inc.: *See*—
Ottemann, William C. Re. 28,004.

Economy Co., The,: *See*—
Price, David D., Jr., and De Bell. Re. 28,006.

General Electric Co.: *See*—
Wilson, William P. Re. 28,005.

Gobell, David H., to Medronic, Inc. Electronic demand heart pacemaker with different pacing and standby rates. Re. 28,003, 5–7–74, Cl. 128—419.

Medronic, Inc.: *See*—
Gobell, David H. Re. 28,003.

Ottemann, William C., to Eaton Yale & Towne Inc. Centrifugal actuator for limited slip differential. Re. 28,004, 5–7–74, Cl. 74—711.

Price, David D., Jr., and L. R. De Bell, ½ each to The Economy Co., and Price, D. D., Jr., and F. C. Apparatus for variable speed playback of plural track records. Re. 28,006, 5–7–74, Cl. 179—100.2.

Wilson, William P., to General Electric Co. Numerical positioning control system. Re. 28,005, 5–7–74, Cl. 318—569.

LIST OF PLANT PATENTEES

Byrum, Roy L., to Joseph H. Hill, Co. Yellow rose plant. 3,544, 5–7–74, Cl. 15.

Conard-Pyle Co., The: *See*—
Meilland, Alain, 3,543.

Drake, Virgil J. Maple tree. 3,542, 5–7–74, Cl. 51.

Hill, Joseph H., Co.: *See*—
Byrum, Roy L. 3,544.

Hyde, Robert W.: *See*—
Leighty, Ralph G. 3,545.

Leighty, Ralph G., deceased, by R. M. A. Leighty, executrix, to Robert W. Hyde, d.b.a. Hyde's House of Roses. Rose plant. 3,545, 5–7–74, Cl. 23.

Leighty, Rosa M. A.: *See*—
Leighty, Ralph G., and R.M.A. 3,545.

Meilland, Alain, to The Conard-Pyle Co. Rose plant. 3,543, 5–7–74, Cl. 18.

Meilland, Marie-Louis, to C. H. Stuart, & Co. Rose plant. 3,546, 5–7–74, Cl. 28.

Paganelli, Frank, to Stark Bro's. Nurseries & Orchards Co. Apple tree. 3,541, 5–7–74, Cl. 35.

Stark Bro's. Nurseries & Orchards Co.: *See*—
Paganelli, Frank. 3,541.

Stuart, C. H., & Co.: *See*—
Meilland, Marie-Louis. 3,546.

LIST OF DESIGN PATENTEES

Aktiebolaget Svenska Flaktfabriken: *See*—
Nygard, Arne, and Svensson. 231,615.

American Air Filter Co., Inc.: *See*—
Woods, Walter E., and Hammann. 231,614.

Andco Inc.: *See*—
Stahlka, Clayton A. 231,634.

Artistic Woodwork Co. Ltd.: *See*—
Vihma, Johannes. 231,591.
Vihma, Johannes. 231,592.

Atlantic Richfield Co.: *See*—
Donmeyer, Delbert W. 231,610.

Bardeau, William M. Coffee urn. 231,646, 5–7–74, Cl. D94—3.

Barlow, Richard A. Mobile building structure. 231,608, 5–7–74, Cl. D12—103.

Bartels, Dennis M., to Mid-West Enterprises, Inc. Plant stake. 231,628, 5–7–74, Cl. D35—1.

Bata Shoe Co., Inc.: *See*—
Edmonds, Thomas A. 231,584.

Binzer, Thomas J.: *See*—
Young, Raymond W., and Binzer. 231,595.

Blattner, David G., R. H. Drinnon, S. P. Ruocco, to The Boeing Co. Airplane. 231,606, 5–7–74, Cl. D12—80.

Bloom, Milton W., to Donlee Mfg. Industries Ltd. Child safety seat. 231,589, 5–7–74, Cl. D6—9.

Boeing Co., The: *See*—
Frajola, Fred D., and Norton. 231,605.
Blattner, David G., Drinnon, and Ruocco. 231,606.
Braley, Mitchel R. Bridle bit. 231,621, 5-7-74, Cl. D30—21.
Burns, Richard H., to The Hobart Mfg. Co. Ticket dispenser. 231,631, 5-7-74, Cl. D52—2.
Cagan, Bernard J., to Plano Products Co. Board for a combined dart and pinball game. 231,627, 5-7-74, Cl. D34—5.
Carter, Proctor N. Fish holder. 231,611, 5-7-74. Cl. D22—30.
Christiansen, Niels K. J. Shipping container for microscopic slides or the like. 231,641, 5-7-74, Cl. D87—1.
Christiansen, Niels K. J. Shipping container for microscopic slides or the like. 231,642, 5-7-74, Cl. D87—1.
Columbus Dental Mfg. Co., The: *See*—
Hiltebrant, Stephen L., and Petruschke, R. Wilhelm and R. William. 231,616.
Consolidated Standard Conveyor Systems Pty. Ltd.: *See*—
Minns, James P. 231,632.
Cvacho, Daniel S., to Reynolds Metals Co. Container for liquids or the like. 231,601, 5-7-74, Cl. D9—216.
Demers, Leo H. Beverage serving tray. 231,594, 5-7-74, Cl. D7—71.
Dinse, Wilhelm. Welding gun for shielded arc welding. 231,597, 5-7-74, Cl. D8—30.
Doman, Donald W., to Kohler Co. Faucet spray-aerator. 231,612, 5-7-74, Cl. D23—35.
Donlee Mfg. Industries Ltd.: *See*—
Bloom, Milton W. 231,589.
Donmeyer, Delbert W., to Atlantic Richfield Co. Seismic gas exploders. 231,610, 5-7-74, Cl. D22—10.
Drinnon, Robert H.: *See*—
Blattner, David G., Drinnon, and Ruocco. 231,606.
Dunn, Kathy A.: *See*—
Glass, Marvin I., and Dunn. 231,623.
Edmonds, Thomas A., to Bata Shoe Co., Inc. Shoe soles. 231,584, 5-7-74, Cl. D2—320.
Fibus, Murray M., to Steel City Corp. Mailbox. 231,636, 5-7-74, Cl. D74—9.
Flanigan, Charles D., to Overly Mfg. Co. Therapeutic exerciser. 231,626, 5-7-74, Cl. D34—5.
Formica Corp.: *See*—
Willard, Jack A. 231,643.
Frajola, Fred D., and R. P. Norton, to The Boeing Co. Airplane. 231,605, 5-7-74, Cl. D12—80.
Gambello, Vincent J., to Pulsatron Corp. Portable douche apparatus. 231,639, 5-7-74, Cl. D83—1.
General Electric Co.: *See*—
Young, Raymond W., and Binzer. 231,595.
Glass, Marvin & Associates: *See*—
Terzian, Rouben T., and Glass. 231,622.
Glass, Marvin I., and Dunn. 231,623.
Glass, Marvin I.: *See*—
Terzian, Rouben T., and Glass. 231,622.
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Hallmark Cards, Inc.: *See*—
Schultz, Richard A. 231,629.
Hammann, Paul E.: *See*—
Woods, Walter F., and Hammann. 231,614.
Hanley, Lawrence A. Table attachable seat for a child. 231,588, 5-7-74, Cl. D6—9.
Herrera, Emmett R. Combined bench, and multiple planter unit. 231,587, 5-7-74, Cl. D6—4.
Hiltebrant, Stephen L., R. Wilhelm Petruschke, and R. William Petruschke, to The Columbus Denta Mfg. Co. Capsule for dental materials or similar article. 231,616, 5-7-74, Cl. D24—1.
Hobart Mfg. Co., The: *See*—
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Kahler, Richard W., to Surf and Psych, Inc. Smoking device. 231,640, 5-7-74, Cl. D85—8.
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Doman, Donald W. 231,612.
Krivka, Alexander. Rotary wing aircraft or the like. 231,603, 5-7-74, Cl. D12—73.
Krivka, Alexander. Rotary wing aircraft or the like. 231,604, 5-7-74, Cl. D12—73.
Kwiatkowski, Harry S., Jr. Transcribing unit for a dictation system. 231,619, 5-7-74, Cl. D26—14.
Lange Co., The: *See*—
Wilmoth, H. Douglas. 231,624.
Lazo de la Vega, Cecilio I. Handbag or the like. 231,586, 5-7-74, Cl. D3—87.
Leedy, Robert M. Combined clip dispenser and pencil holder. 231,638, 5-7-74, Cl. D74—5.
Lind, Robert L.: *See*—
Lindsay, James, Jr., Lind, and Scott. 231,618.
Lindsay, James, Jr., R. L. Lind, and D. E. Scott, to Square D. Co. Portable transmitter for remote control of electrically operated equipment. 231,618, 5-7-74, Cl. D26—13.
Lucas, Jack R. Combination dental floss holder and mirror. 231,617, 5-7-74, Cl. D24—1.
Lynor Engineering, Inc.: *See*—
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Mailbox, Inc., The: *See*—
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Manderfield, Ellen B., to Oneida Ltd. Spoon or similar article. 231,596, 5-7-74, Cl. D7—150.
McKinney, Opal I. Combined tote bag and stadium seat cushion or similar article. 231,590, 5-7-74, Cl. D6—202.
Michigan Hanger Co., Inc.: *See*—
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Mid-West Enterprises, Inc.: *See*—
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Mullis, Ray E., to Pine State Tool and Machine Co., Inc. Awning guard roller assembly for recreational vehicle doors or the like. 231,600, 5-7-74, Cl. D8—238.
Multitech International Corp.: *See*—
Sarber, Richard H. 231,613.
Northrup, Lyle M., to Lynor Engineering, Inc. Door rotor lock assembly or similar article. 231,598, 5-7-74, Cl. D8—109.
Norton, Robert P.: *See*—
Frajola, Fred D., and Norton. 231,605.
Nygard, Arne, and S. Svensson, to Aktiebolaget Svenska Flaktfabriken. Kitchen hood. 231,615, 5-7-74, Cl. D23—151.
Ockerman, Philip D. Toothbrush kit. 231,593, 5-7-74, Cl. D6—94.
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Penney, Richard H., to Sperry Rand Corp. Typewriter. 231,635, 5-7-74, Cl. D64—11.
Petruschke, R. Wilhelm: *See*—
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Petruschke, R. William: *See*—
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Plano Products Co.: *See*—
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Rellis, Lawrence B. Aircraft. 231,607, 5-7-74. Cl. D12—80.
Reynolds Metals Co.: *See*—
Cvacho, Daniel S. 231,601.
Rumble, Raymond M., to Michigan Hanger Co., Inc. Beam clamp body. 231,599, 5-7-74, Cl. D8—235.
Ruocco, Stefano P.: *See*—
Blattner, David G., Drinnon, and Ruocco. 231,606.
Sarber, Richard H., to Multitech International Corp. Pilot's headset having receiver and transmitter. 231,613, 5-7-74, Cl. D26—14.
Schultz, Richard A., to Hallmark Cards, Inc. Candle holder. 231,629, 5-7-74. Cl. D48—2.
Scott, David E.: *See*—
Lindsay, James Jr., Lind, and Scott. 231,618.
Sherry, George. Wall lamp. 231,630, 5-7-74, Cl. D48—4.
Singer Co., The: *See*—
Smith, Randel. 231,644.
Jolley, Paul E. 231,645.
Smith, Randel, to The Singer Co. Tufting machine clip. 231,644, 5-7-74, Cl. D92—15.
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Stahel, Alvin J., II, to The Holes-Webury Co. Paper and pencil holder. 231,637, 5-7-74, Cl. D74—5.
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Steel City Corp.: *See*—
Fibus, Murray M. 231,636.
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Kahler, Richard W. 231,640.
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Nygard, Arne, and Svensson. 231,615.
Terzian, Rouben T., and M. I. Glass, to Marvin Glass & Associates. Doll. 231,622, 5-7-74, Cl. D34—4.
Toma, George W.: *See*—
Vanden Broek, Jan A., and Toma. 231,609.
Totani, Hisao, to Pulton Chaine Co., Ltd. Link for conveyor. 231,633, 5-7-74, Cl. D55—1.
Transdyne General Corp.: *See*—
Vanden Broek, Jan A, and Toma. 231,609.
Van Dyke, Lyle H. Telephone hand-set support. 231,620, 5-7-74, Cl. D26—14.
Vanden Broek, Jan A, and G. W. Toma, to Transdyne General Corp. Optical electrophoresis scanner. 231,609, 5-7-74, Cl. D16—2.
Vihma, Johannes, to Artistic Woodwork Co., Ltd. Picture frame moulding. 231,591, 5-7-74, Cl. D6—246.
Vihma, Johannes, to Artistic Woodwork Co., Ltd. Picture frame moulding. 231,592, 5-7-74, Cl. D6—246.
Werner, Frank D. Golf putter. 231,625, 5-7-74, Cl. D34—5.
Willard, Jack A., to Formica Corp. Resinous deep textured decorative laminate sheet. 231,643, 5-7-74, Cl. D87—3.
Wilmoth, H. Douglas, to The Lange Co. Putter. 231,624, 5-7-74, Cl. D34—5.
Woods, Walter E., and P. E. Hammann, to American Air Filter Co., Inc. Roof-mounted air conditioning unit. 231,614, 5-7-74. Cl. D23—139.
Yoshimura, Masao, to The Mailbox, Inc. Signalized belt. 231,585, 5-7-74, Cl. D2—380.
Young, Raymond W., and T. J. Binzer, to General Electric Co. Portable microwave oven or similar article. 231,595, 5-7-74, Cl. D7—128.
Zetterberg, Niklas F. Boat planing fin. 231,602, 5-7-74, Cl. D12—70.

CLASSIFICATION OF PATENTS

ISSUED MAY 7, 1974

NOTE.—First number, class; second number, subclass; third number, patent number

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308 3,808,620
363A 3,808,947
3,808,948
473 3,808,949
487 3,808,950
492 3,808,951
505 3,808,952

CLASS 92
2 3,808,953
65 3,808,954
169 3,808,955
172 3,808,956

CLASS 93
36.7 3,808,957
49R 3,808,958
53AC 3,808,959
84 3,809,199

CLASS 96
1SD 3,809,554
1R 3,809,555
3,809,556
1.2 3,809,557
22 3,809,563
33 3,809,562
45.1 3,808,558
49 3,809,559
3,809,560
84 3,809,561
100 3,808,945

CLASS 98
41R 3,808,960

CLASS 99
281 3,808,961
323.4 3,808,962
417 3,808,963
518 3,808,964

CLASS 100
7 3,808,965
106 3,808,966
221 3,808,967
264 3,808,968

CLASS 101
35 3,808,970
72 3,808,969
181 3,808,971

CLASS 102
7.2 3,808,972
28R 3,809,964
38 3,808,973
43P 3,808,974
70.2GA 3,808,975

CLASS 104
12 3,808,976
130 3,808,977
3,808,978
131 3,808,979
167 3,808,980

CLASS 105
369BA 3,808,981
376 3,808,982

CLASS 106
38.9 3,809,564
56 3,809,565
110 3,809,566
306 3,809,567

CLASS 108
136 3,808,983

CLASS 109
59 3,808,984

CLASS 110
3 3,808,985
8A 3,808,987
8C 3,808,619
8R 3,808,986
10 3,808,988
14 3,808,989

CLASS 112
9 3,808,990
121.12 3,808,991

121.15 3,808,992
155 3,808,993
199 3,808,994
209 3,808,995

CLASS 114

.5R 3,808,996
40 3,808,997
66.5R 3,808,998
66.5S 3,808,999
124 3,809,000
206R 3,809,001
235B 3,809,002

CLASS 115

1R 3,809,003
3,809,004
12R 3,809,005
24 3,809,006

CLASS 116

63P 3,809,007

CLASS 117

38 3,809,568
93.31 3,809,569
102M 3,809,570
106A 3,809,571
127 3,809,572
138.8F 3,809,573
201 3,809,574

CLASS 118

6 3,809,008
44 3,809,009
429 3,809,010
635 3,809,011
637 3,809,012

CLASS 119

1 3,809,013
28 3,809,014
126 3,809,015

CLASS 122

6A 3,809,016
11 3,809,017
510 3,809,018

CLASS 123

8.01 3,809,019
8.07 3,809,020
8.09 3,809,021
8.19 3,809,022
8.27 3,809,023
8.45 3,809,024
8.47 3,809,025
3,809,026
30R 3,809,027
32EA 3,809,028
3,809,029
32K 3,809,030
32R 3,809,031
52M 3,809,032
90.46 3,809,033
102 3,809,034
119DB 3,809,037
119A 3,809,038
3,809,039
119B 3,809,035
119R 3,809,036
148C 3,809,042
148E 3,809,040
3,809,041
3,809,043
3,809,044
179 3,809,045
188GC 3,809,046

CLASS 124

1 3,809,047
25 3,809,048

CLASS 125

23C 3,809,049
35 3,809,050

CLASS 126

9R 3,809,051
19.5 3,809,059
25R 3,809,053
38 3,809,054
39H 3,809,055
59.5 3,809,056
3,809,057
116R 3,809,052
120 3,809,058
271.2C 3,809,060
350R 3,809,061
369 3,809,062
373 3,809,063
381 3,809,064

CLASS 128

1R 3,809,065
2C 3,809,067
2F 3,809,068
2R 3,809,066
2.05F 3,809,070
2.06B 3,809,071
2.1B 3,809,069
23 3,809,072
66 3,809,073
84R 3,809,074
92A 3,809,075
130 3,809,076
132D 3,809,077
138A 3,809,078
145.7 3,809,079
194 3,809,080
214.4 3,809,081
218F 3,809,083
218P 3,809,082
266 3,809,084
275 3,809,085
278 3,809,086
3,809,087
285 3,809,088
287 3,809,089
294 3,809,090
303 3,809,091
305 3,809,092
3,809,093
321 3,809,094
347 3,809,095
403 3,809,096
419P Re.28,003

CLASS 131

10.7 3,809,097

CLASS 132

7 3,809,098
53 3,809,099
3,809,100
76.4 3,809,101
82R 3,809,102
93 3,809,103

CLASS 134

21 3,809,575
42 3,809,576
3,809,577
122 3,809,104
3,809,105
176 3,809,106

CLASS 135

48 3,809,107

CLASS 136

6E 3,809,578
26 3,809,579
133 3,809,580
161 3,809,581

CLASS 137

73 3,809,108
88 3,809,109
116.5 3,809,110
236 3,809,112
268 3,809,113
315 3,809,114
344 3,809,115
391 3,809,116
493.6 3,809,117
503 3,809,111
525 3,809,118
527.8 3,809,119
607 3,809,120
613 3,809,121
614.06 3,809,122
625.41 3,809,124
625.5 3,809,123
625.65 3,809,125
630.14 3,809,126

CLASS 138

44 3,809,127
114 3,809,128

CLASS 139

12 3,809,129
3,809,130
125 3,809,131

CLASS 141

122 3,809,132
198 3,809,133

CLASS 144

2Z 3,809,134
34F 3,809,135

CLASS 145

3.61 3,809,137
50R 3,809,136

CLASS 148

1.5 3,809,582
6.35 3,809,583
172 3,809,584

CLASS 149

19.4 3,809,585
19.91 3,809,586
109 3,809,587

CLASS 150

52R 3,809,138

CLASS 151

41.72 3,809,139

CLASS 156

18 3,809,588
68 3,809,589
149 3,809,590
151 3,809,591
244 3,809,594
257 3,809,593
267 3,809,595
380 3,809,596
394 3,809,592

CLASS 159

2E 3,809,140

CLASS 160

89 3,809,141
135 3,809,142
168 3,809,143
184 3,809,144

CLASS 161

1 3,809,599
39 3,809,597
40 3,809,598
109 3,809,600
116 3,809,601
165 3,809,602
186 3,809,603

CLASS 162

100 3,809,604
158 3,809,605
194 3,809,606

CLASS 164

49 3,809,145
66 3,809,146
122 3,809,147
283M 3,809,148

CLASS 165

1 3,809,149
3,809,150
42 3,809,151
51 3,809,152
62 3,809,153
105 3,809,154
133 3,809,155
167 3,809,156

CLASS 166

185 3,809,157
250 3,809,158
258 3,809,159
294 3,809,160
301 3,809,161
315 3,809,162

CLASS 169

9 3,809,163

CLASS 171

58 3,809,164

CLASS 172

328 3,809,165
763 3,809,166
808 3,809,167

CLASS 173

13 3,809,168
28 3,809,169

CLASS 174

11BH 3,809,794
28 3,809,795
33 3,809,796
52S 3,809,797
59 3,809,798
68C 3,809,799
70R 3,809,800
99B 3,809,801
103 3,809,802
114R 3,809,803

CLASS 175

7 3,809,170

CLASS 176

19R 3,809,607
78 3,809,609
3,809,610
87 3,809,608

CLASS 177

165 3,809,171

CLASS 178

5.2D 3,809,804
6.6A 3,809,805
7.2 3,809,807
7.3S 3,809,808
7.6 3,809,806
69.51V 3,809,809

CLASS 179

1B 3,809,810
3,809,812
1N 3,809,811
5R 3,809,813
8A 3,809,814
15AQ 3,809,819
15BA 3,809,820
15BS 3,809,817
15BY 3,809,818
15FD 3,809,815
3,809,816
15R 3,809,821
18E 3,809,822
27D 3,809,823
37 3,809,824
81R 3,810,247
82 3,809,825
90CS 3,809,826
100.2S Re.28,006
100.41B 3,809,828
107S 3,809,829

CLASS 180

5R 3,809,172
3,809,173
64A 3,809,174
69.1 3,809,175
79.2B 3,809,176
88 3,809,177

CLASS 181

33HC 3,809,178
36A 3,809,179

CLASS 182

2 3,809,180
70 3,809,181
148 3,809,182
186 3,809,183

CLASS 184

7D 3,809,184
15R 3,809,185

CLASS 188

1B 3,809,186
24 3,809,187
62 3,809,188
71.9 3,809,189
72.2 3,809,190
106A 3,809,191
196BA 3,809,193
218XL 3,809,192

CLASS 190

41B 3,809,194

CLASS 192

6A 3,809,195
12B 3,809,196
5NB 3,809,197
106.2 3,809,198
107C 3,809,200
109F 3,809,201

CLASS 194

1R 3,809,202

CLASS 195

30 3,809,611
36R 3,809,612
63 3,809,613
81 3,809,614
103.5R 3,809,615
3,809,616
127 3,809,617
140 3,809,618

CLASS 197

1A 3,809,203
3,809,204
16 3,809,205

CLASS 198

16R 3,809,206
34 3,809,207
85 3,809,208
167 3,809,209
179 3,809,210
192R 3,809,211
232 3,809,212
235 3,809,214
249 3,809,213

CLASS 200

11TW 3,809,830
38C 3,809,831
61.18 3,809,832
61.27 3,809,833
67D 3,809,834
83N 3,809,835
144B 3,809,836
153T 3,809,837
159R 3,809,838
160 3,809,839
221 3,809,842
321 3,809,840
329 3,809,841

CLASS 201

39 3,809,619

CLASS 202

139 3,809,620
205 3,809,621
263 3,809,622

CLASS 203

11 3,809,623

CLASS 204

15 3,809,625
20 3,809,626
37R 3,809,627
43G 3,809,628
95 3,809,629
98 3,809,630
105M 3,809,624
149 3,809,631
158R 3,809,632
159.14 3,809,633
181 3,809,634
192 3,809,635
195M 3,809,636
3,809,637
3,809,638
195S 3,809,639
197 3,809,640
213 3,809,641
275 3,809,642

CLASS 206

.5 3,809,215
.84 3,809,217
45.34 3,809,216
53 3,809,218
55K 3,809,219
204 3,809,223
219 3,809,224
220 3,809,225
229 3,809,226
264 3,809,227
306 3,809,228
3,809,229
3,809,230
314 3,809,231
320 3,809,232
328 3,809,233
398 3,809,222
448 3,809,234
461 3,809,221
484 3,809,220
499 3,809,235
519 3,809,236

CLASS 208

191 3,809,643
210 3,809,644

CLASS 209

80.5 3,809,237
83 3,809,238
111.8 3,809,239

CLASS 210

21 3,809,645
44 3,809,240
87 3,809,241
96 3,809,243
136 3,809,244
195 3,809,242
207 3,809,245
232 3,809,246
278 3,809,247

CLASS 212

55 3,809,248
3,809,249
3,809,250

CLASS 213

15 3,809,251
24 3,809,252

CLASS 214

1BD 3,809,255
1.5 3,809,253
6B 3,809,256
6P 3,809,254
8.5C 3,809,257
10.5R 3,809,258
16.4A 3,809,259
16.4R 3,809,263
17D 3,809,260
38CC 3,809,261
152 3,809,262
302 3,809,264
309 3,809,265
450 3,809,266
508 3,809,267
512 3,809,268
519 3,809,269
621 3,809,270

CLASS 215

9 3,809,271
3,809,272
3,809,273
3,809,274
13R 3,809,275
253 3,809,365
256 3,809,370
320 3,809,277
332 3,809,276

CLASS 219

10.55 3,809,843
3,809,844
3,809,845
3,810,248
10.79 3,809,846
69C 3,809,848
69P 3,809,847
69V 3,809,852
98 3,809,849
121P 3,809,850
137 3,809,853
216 3,809,854
3,809,855
243 3,809,851
279 3,810,249
286 3,809,856
3,809,857
331 3,809,858
345 3,809,859
385 3,809,860
469 3,809,861
512 3,809,862

CLASS 220

4F 3,809,278
21 3,809,279
42C 3,809,280
44R 3,809,281
3,809,282
54 3,809,283
60R 3,809,284
94R 3,809,285

CLASS 221

66 3,809,287

CLASS 222

1 3,809,286
5 3,809,288
83 3,809,289
88 3,809,290
145 3,809,291
146C 3,809,292
148 3,809,293
182 3,809,294
183 3,809,295
309 3,809,296
3,809,297
386 3,809,298
521 3,809,299
545 3,809,300

CLASS 226

25 3,809,301
33 3,809,302
197 3,809,303

CLASS 227

8 3,809,307

CLASS 228

5 3,809,306
9 3,809,308
44 3,809,309

CLASS 229

5.7 3,809,304
26 3,809,310
45 3,809,305
87R 3,809,311

CLASS 235

30R 3,809,312
61.11E 3,809,863
92DN 3,809,864
150.2 3,809,867
151 3,809,865
3,809,868
151.3 3,809,869
3,809,870
3,809,871
151.34 3,809,866
170 3,809,872
181 3,809,873
183 3,809,874
197 3,809,875
3,809,876

CLASS 236

15A 3,809,313
49 3,809,314

CLASS 239

31 3,809,315
167 3,809,316
251 3,809,317
273 3,809,318
274 3,809,319
416.4 3,809,320

CLASS 240

1LP 3,809,877
1.3 3,809,878
3.1 3,809,879
6.4R 3,810,250
8.2 3,809,880
10.6CH 3,809,882
10.63 3,809,321
51.11 3,810,085
54A 3,809,883
106R 3,809,881

CLASS 241

46.17 3,809,322
101.7 3,809,323
210 3,809,324
278R 3,809,325

CLASS 242

19 3,809,326
71 3,809,327
71.3 3,809,330
100.1 3,809,331
107.4 3,809,332
129 3,809,333
158.3 3,809,334
184 3,809,328
186 3,809,335
202 3,809,336
204 3,809,329

CLASS 244

1SS 3,809,337
1R 3,809,338
3.3 3,809,339
54 3,809,340
134R 3,809,341
145 3,809,342

CLASS 248

4 3,809,343
16 3,809,344
27.8 3,809,345
44 3,809,346
48.1 3,809,347
49 3,809,348
51 3,809,349
57 3,809,350
210 3,809,351
317 3,809,358
346.1 3,809,353
449 3,809,354
451 3,809,352

CLASS 249

106 3,809,355
155 3,809,356
161 3,809,357

CLASS 250

199 3,809,887
213VT 3,809,889
213R 3,809,888
214P 3,809,890
222R 3,809,891
226 3,809,892
227 3,809,893
236 3,809,894
237G 3,809,895
286 3,809,896
288 3,809,897
303 3,809,898
311 3,809,899
321 3,809,900
323 3,809,886
337 3,809,901
338 3,809,902
357 3,809,885
358 3,809,903
3,809,904
370 3,809,905
472 3,809,906
548 3,809,907
551 3,809,908
556 3,809,909
561 3,809,910
571 3,809,911
574 3,809,912
575 3,809,913

CLASS 251

148 3,809,359
196 3,809,360
305 3,809,361
332 3,809,362
355 3,809,363

CLASS 252

8.8 3,809,646
28 3,809,647
32.7F 3,809,648
33.2 3,809,649
42 3,809,650
47.5 3,809,651
56R 3,809,652
148 3,809,653
180 3,809,654
391 3,809,655
408 3,809,656
429C 3,809,657
472 3,809,658
542 3,809,659

CLASS 254

134.3FT 3,809,366
144 3,809,367
150R 3,809,368
173R 3,809,369

CLASS 256

47 3,809,371

CLASS 259

4 3,809,372
154 3,809,373

CLASS 260

2EP 3,809,660
2.5 3,809,669
5 3,809,661
17.4BB 3,809,662
17.4GC 3,809,664
17.4ST 3,809,663
29.6S 3,809,665
29.7D 3,809,666
31.8R 3,809,667
33.4UA 3,809,668
37N 3,809,670
42.16 3,809,673
42.27 3,809,672
42.46 3,809,671
45.75K 3,809,677
45.75R 3,809,676
45.85R 3,809,678
45.9R 3,809,674
3,809,675
46.5Y 3,809,783
47CZ 3,809,679
51R 3,809,680
52 3,809,681
61 3,809,682
78.4N 3,809,683
79 3,809,684
80.71 3,809,685
89.5A 3,809,686
93.5A 3,809,687
94.9R 3,809,688
121 3,809,782
211.5R 3,809,689
239.5 3,809,690
240E 3,809,691
243R 3,809,692
248CS 3,809,693
256.4C 3,809,696
268PC 3,809,698
268C 3,809,697
286A 3,809,694
290HL 3,809,695
306.7 3,809,699
3,809,700
308R 3,809,701
326.4 3,809,702
332.5 3,809,703
343.2R 3,809,704
367 3,809,705
403 3,809,706
404 3,809,707
409 3,809,708
410.7 3,809,709
3,809,711
3,809,712
410.9R 3,809,710
448.2E 3,809,713
479R 3,809,714
3,809,715
491 3,809,716
512R 3,809,717
562S 3,809,718
564F 3,809,719
570R 3,809,720
570.9 3,809,721
602 3,809,722
611.5 3,809,723
635R 3,809,724
648C 3,809,725
677A 3,809,726
681 3,809,727
683.68 3,809,728
874 3,809,729
968 3,809,730

CLASS 261

87 3,809,375
130 3,809,374

CLASS 264

5 3,809,731
22 3,809,732
45 3,809,733
51 3,809,734
3,809,735
120 3,809,736
154 3,809,737
168 3,809,738
297 3,809,739
306 3,809,740
328 3,809,741

CLASS 266

16 3,809,376
18 3,809,377
33R 3,809,378
34T 3,809,380
34V 3,809,379
35 3,809,381

CLASS 267

65A 3,809,382

CLASS 269

91 3,809,383

CLASS 270

54 3,809,384
3,809,385
58 3,809,386
79 3,809,387

CLASS 271

20 3,809,388
91 3,809,389
204 3,809,390

CLASS 272

56.5SS 3,809,391
57J 3,809,393
57R 3,809,392
80 3,809,394

CLASS 273

1E 3,809,395
1R 3,809,396
26B 3,809,397
43A 3,809,398
54A 3,809,400
55R 3,809,399
67A 3,809,401
73C 3,809,402
80B 3,809,403
87.4 3,809,404
88 3,809,405
95A 3,809,406
134B 3,809,408
134G 3,809,407
139 3,809,409

CLASS 281

5 3,809,410

CLASS 285

42 3,809,411
110 3,809,412
348 3,809,413

CLASS 290

38 3,809,914
40 3,810,251

CLASS 292

4 3,809,414
33 3,809,415
216 3,809,416
259 3,809,417
264 3,809,418
338 3,809,419

CLASS 293

70 3,809,420

CLASS 294

50.8 3,809,421
74 3,809,422
88 3,809,423
113 3,809,424

CLASS 296

22 3,809,425
27 3,809,426
35R 3,809,427
97C 3,809,428

CLASS 298

17S 3,809,429

CLASS 299

5 3,809,430
34 3,809,431
85 3,809,432

CLASS 301

1 3,809,433
37R 3,809,434
112 3,809,435

CLASS 302

20 3,809,436
22 3,809,438
53 3,809,439
59 3,809,440

CLASS 303

21F 3,809,437
52 3,809,441

CLASS 305

14 3,809,442

CLASS 307

10AT 3,809,915
18 3,809,916
39 3,809,917
41 3,809,918
3,809,919
88ET 3,809,920
116 3,809,921
118 3,809,922
125 3,809,924
221D 3,809,923
235R 3,809,926
235 3,809,925
293 3,809,927
303 3,809,928
310 3,809,929
311 3,809,930

CLASS 308

9 3,809,443
174 3,809,444
184 3,809,445
217 3,809,446
236 3,809,447

CLASS 310

8.1 3,809,931
41 3,809,932
52 3,809,933
53 3,809,934
68 3,809,935
171 3,809,936
184 3,809,937
254 3,809,938

CLASS 312

39 3,809,448
194 3,809,449
351 3,809,450
3,809,451

CLASS 313

7 3,809,957
39 3,809,939
61R 3,809,940
85S 3,809,945
94 3,809,941
113 3,809,942
217 3,809,943
227 3,809,944

CLASS 315

3.5 3,809,949
11 3,809,946
27GD 3,809,947
3,809,948
39.71 3,809,950
149 3,809,951
169TV 3,809,952
241P 3,809,954

CLASS 317

3 3,809,955
6 3,809,956
11E 3,809,958
3,809,959
12R 3,810,252
13B 3,809,960
18B 3,809,961
18D 3,809,962
22 3,809,963
113 3,809,965
117 3,809,966
3,809,967
120 3,809,968
3,809,969
141S 3,809,970
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